FOUNDRY

EST. 1902

TRADE JOURNAL

WITH WHICH IS INCORPORATED THE IRON AND STEEL TRADES JOURNAL

VOL. 110
No. 2323

JUNE 15, 1961

Registered at the G.P.O. as a Newspaper

Offices: John Adam House, John Adam St., London, W.C.2

Single Copy 1/-. By Post 1/4. Annual Subscription, Home 52/-, Abroad 60/- (Prepaid)

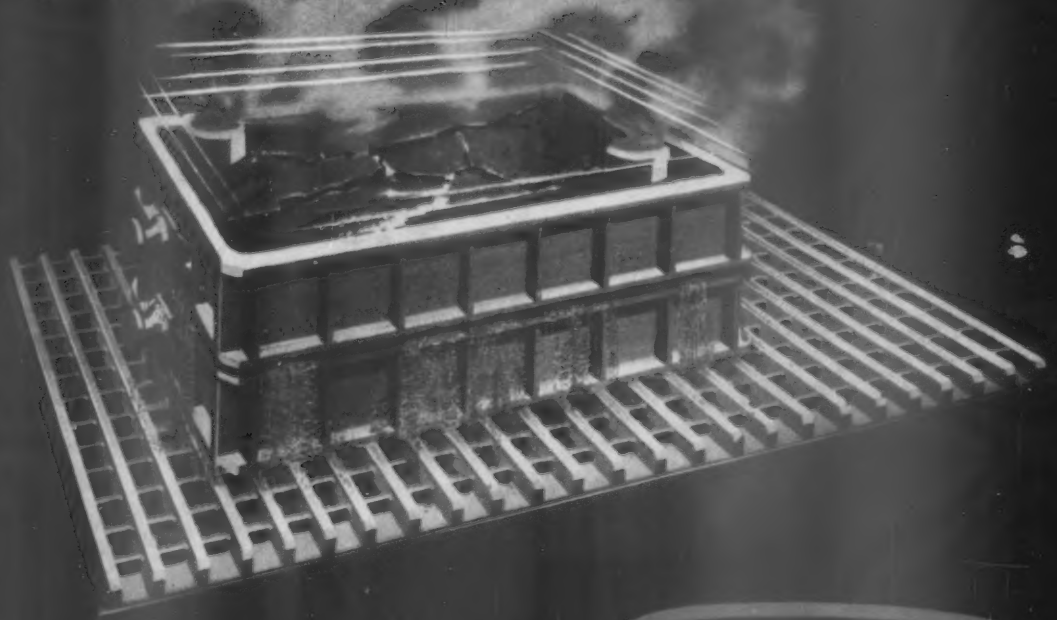

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Photo by courtesy of Messrs. Macmillan Foundries Ltd, Watford

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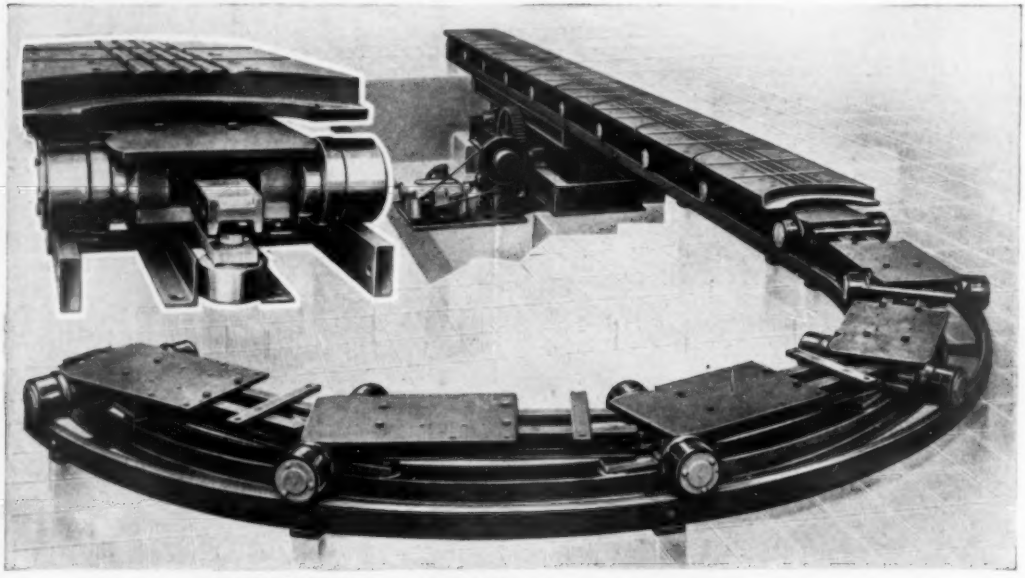
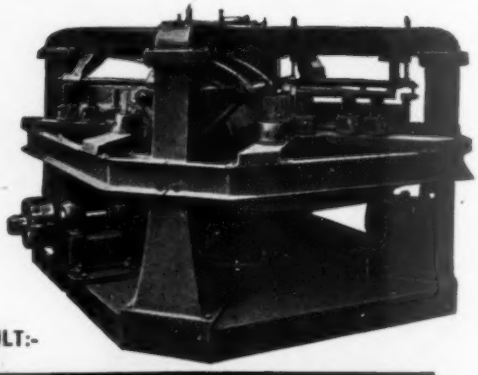
MOULD CONVEYOR. PLANTS



TYPICAL MOULD CONVEYOR SHOWING SOME C.I. PLATES REMOVED, ALSO DETAILS OF AXLES. SIZES TO REQUIREMENTS



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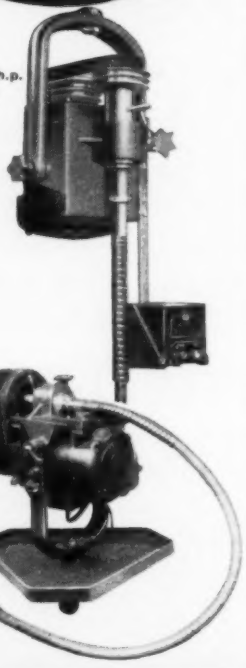

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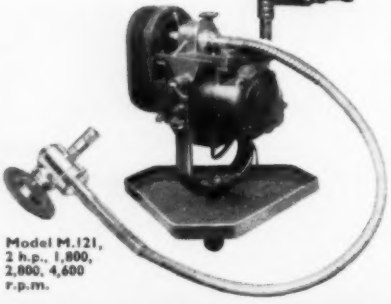

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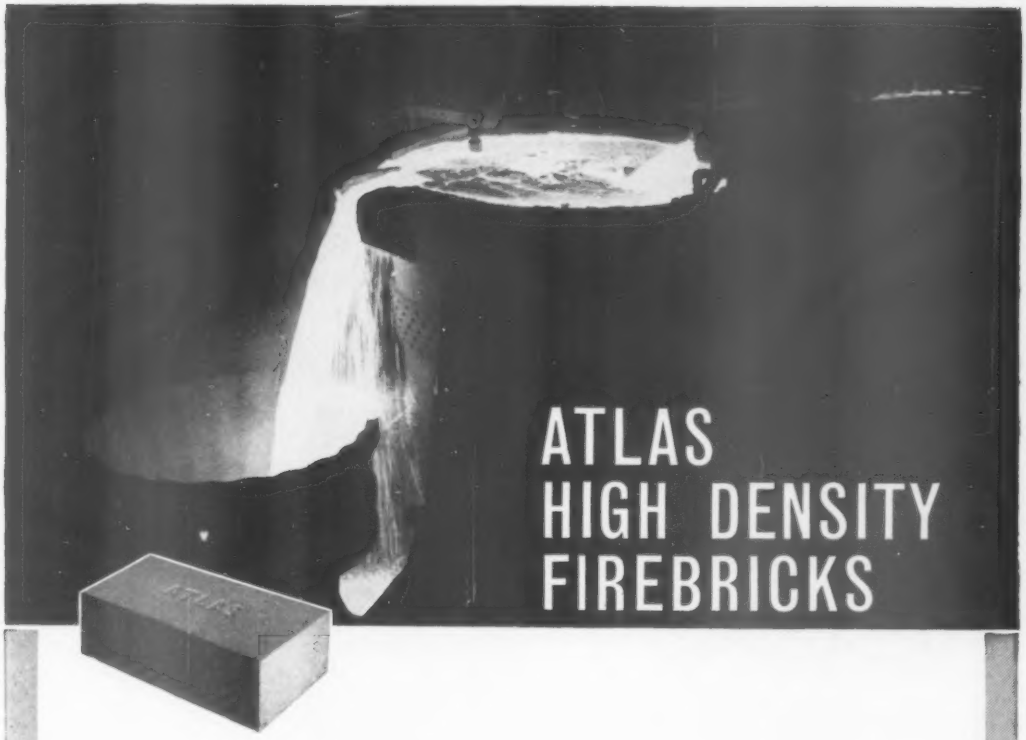

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ILLUSTRATION

Tapping a furnace at Abbey Melting Shop, Steel Company of Wales Ltd. Ladle Bottoms are ATLAS Firebricks.

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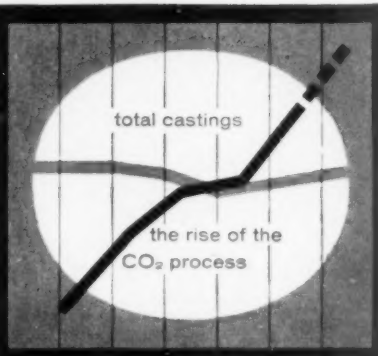

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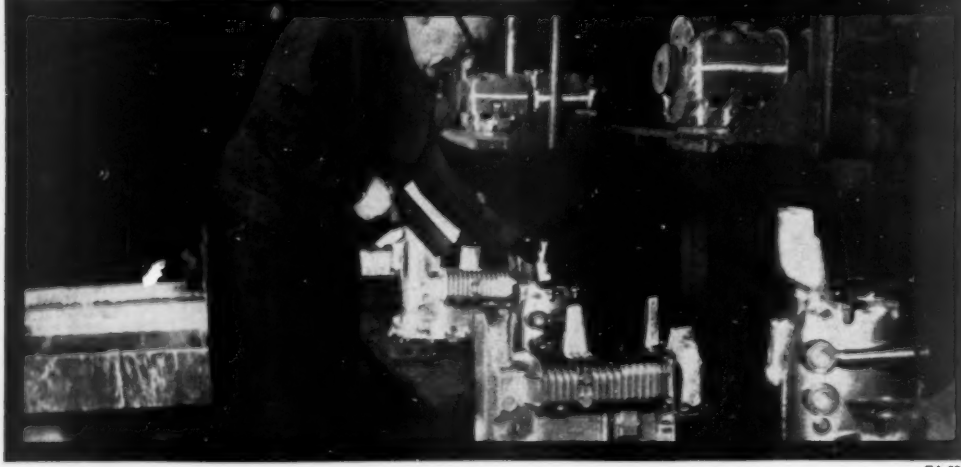
HARD AND FAST FACTS 4

the quality control of the CO_2 process for making better cores and moulds faster

DCL C2



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F.T.4

A tale of seven cats...

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What a caterwaul! There's no need to cry over spilt milk (or money). Just wipe up the tears and use Catalac in future. Catalac is a Cat-o-many-tails, each one saving you time and money. Catalac core and mould sprays and paints can be flame or air set. These Cats give you a clean, smooth, almost purrrfect finish with a clean strip. Foundry managers find that this kind of Cat keeps fettling right down to a minimum. It's time you became a Cat fancier too.

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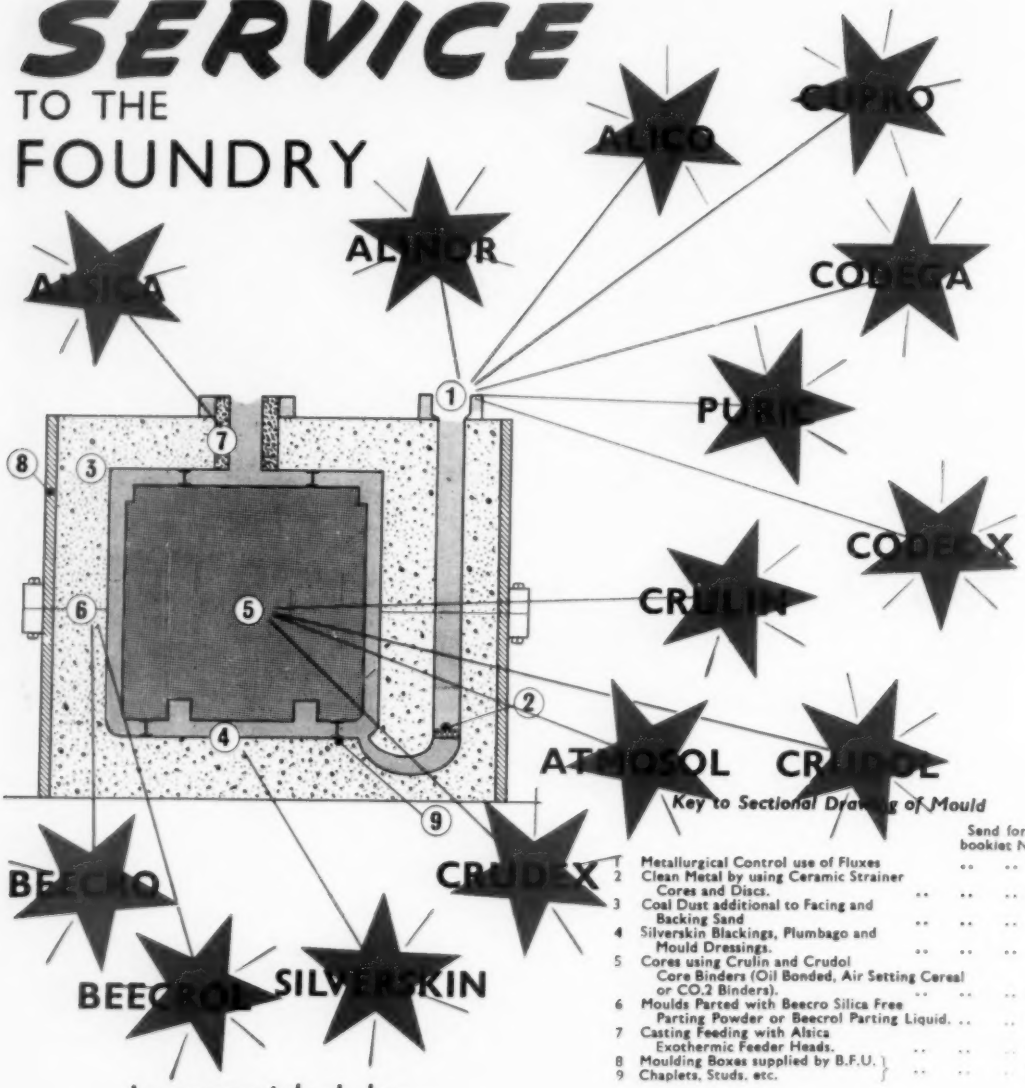

Key to Sectional Drawing of Mould

		Send for booklet No.
1	Metallurgical Control use of Fluxes	3
2	Clean Metal by using Ceramic Strainer Cores and Discs.	4
3	Coal Dust additional to Facing and Backing Sand	1
4	Silverskin Blackings, Plumbago and Mould Dressings.	1
5	Cores using Crulin and Crudol Core Binders (Oil Bonded, Air Setting Cereal or CO_2 Binders).	2
6	Moulds Parted with Beecro Silica Free Parting Powder or Beecrol Parting Liquid.	1
7	Casting Feeding with Alsica Exothermic Feeder Heads.	4
8	Moulding Boxes supplied by B.F.U. }	5
9	Chaplets, Studs, etc. }	

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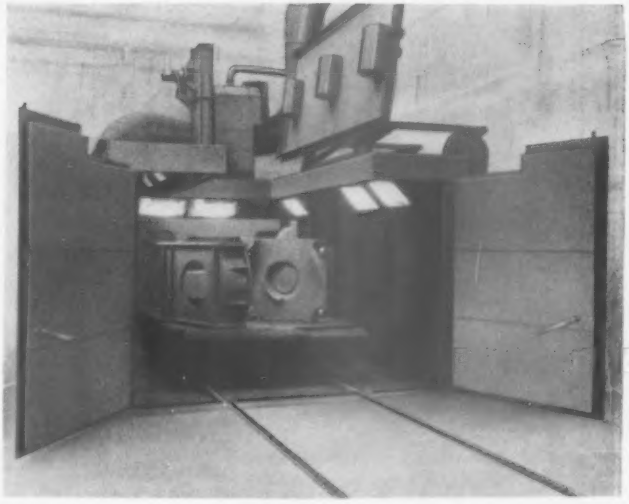
cut out for it ....

. . . Tilghman's shotblast & de-coring plants

Illustrated right is a Tilghman's Shot Blast and De-coring Room installation at Messrs. Walker Bros. (Wigan) Ltd. The installation is designed to create ultra-efficiency in the removal of sand, the provision of clean air, good working conditions for the operator and high blast power for removing sand from deep pockets.

Air curtains are provided ensuring complete visibility for the operator. A magnetic separator is also incorporated in the abrasive system, and dust, sand and foreign bodies are continuously removed ensuring that only cleaned useful abrasive is re-fed to the nozzle.



The waste sand is conveyed to a Sand Disposal Hopper, which is illustrated on the left, with a lorry in position to receive the waste sand load. Also illustrated is the latest Tilghman 'T' type filter tube dust collector, designed for high efficiency operation. For further details send for leaflet No. T.12R.

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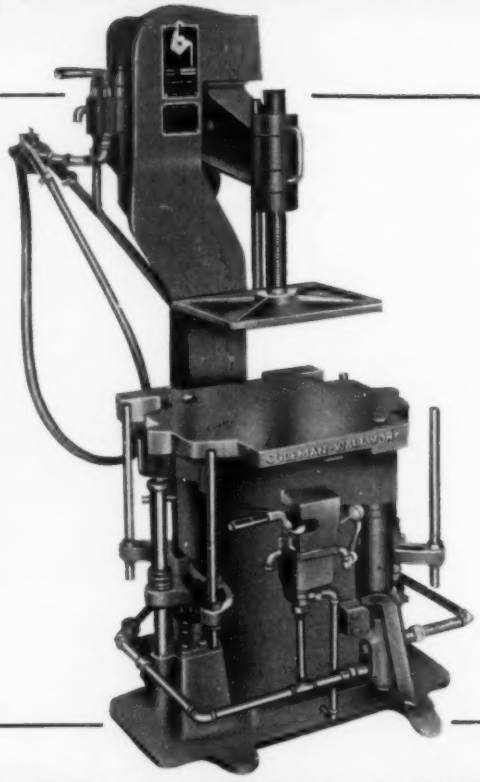
WT563C

This machine, with its table size of 35" x 24" and useful load of 800 lbs., has all the advantages of the WT.563 machine plus a larger capacity. A wide range of moulding boxes and pattern plates can be accommodated and boxes of varying depths utilized. Pattern-plate change is simple and rapid.



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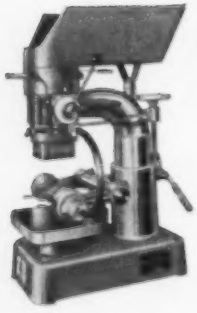

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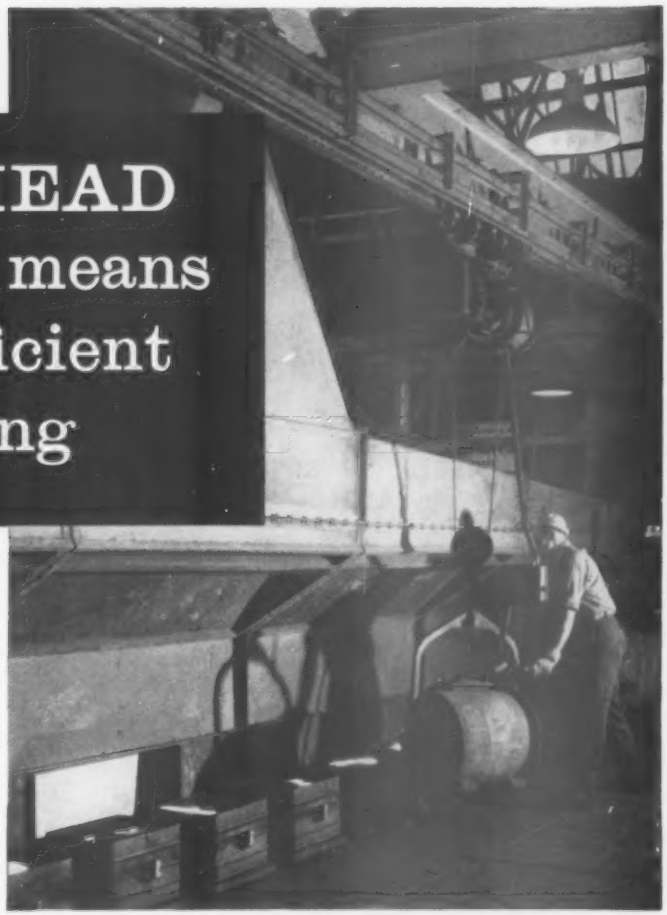

An overhead handling system from British MonoRail Limited means more economic, smoother pouring at the Derby foundry of The Leys Malleable Castings Company Limited. On the right an operator pours molten metal into moulds on a moving conveyor from a 500 lb ladle slung on a MonoRail track. The trolley and electric hoist on the track are moved by a power driven chain synchronised with the conveyor.

British MonoRail Limited have engineered many such safe and economic foundry handling systems for processes ranging from pouring to fettling—manually operated, power driven or remotely controlled. They also supply low headroom long span underslung bridge cranes with up to 5 tons capacity as part of complete overhead handling systems across or beyond a factory floor.

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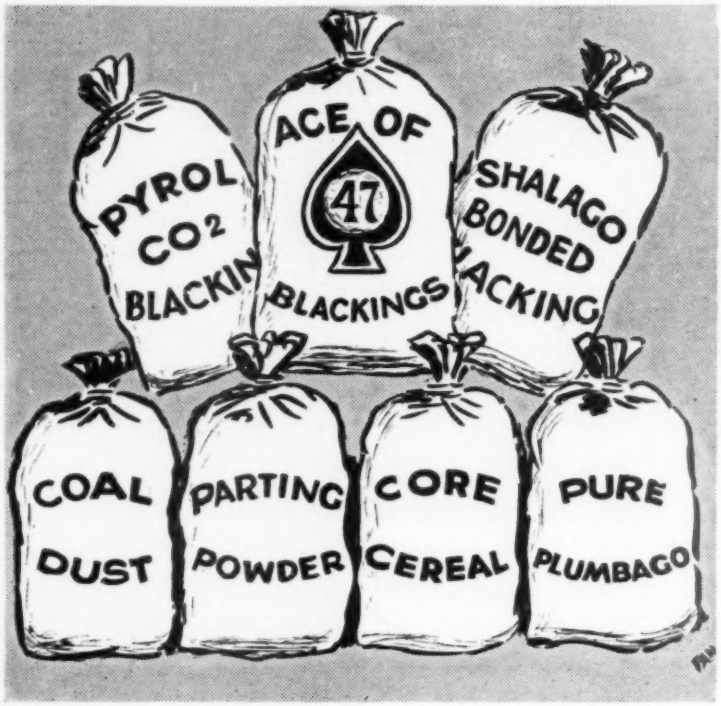

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you save on space

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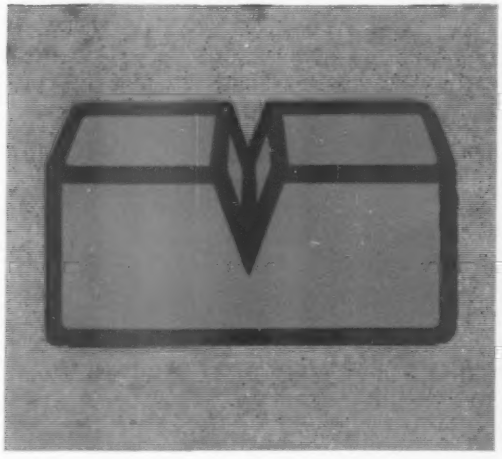

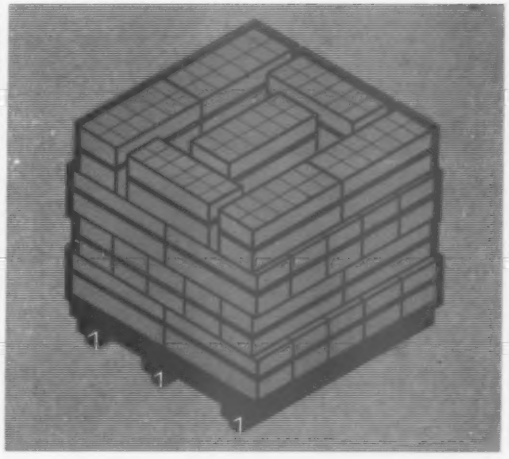

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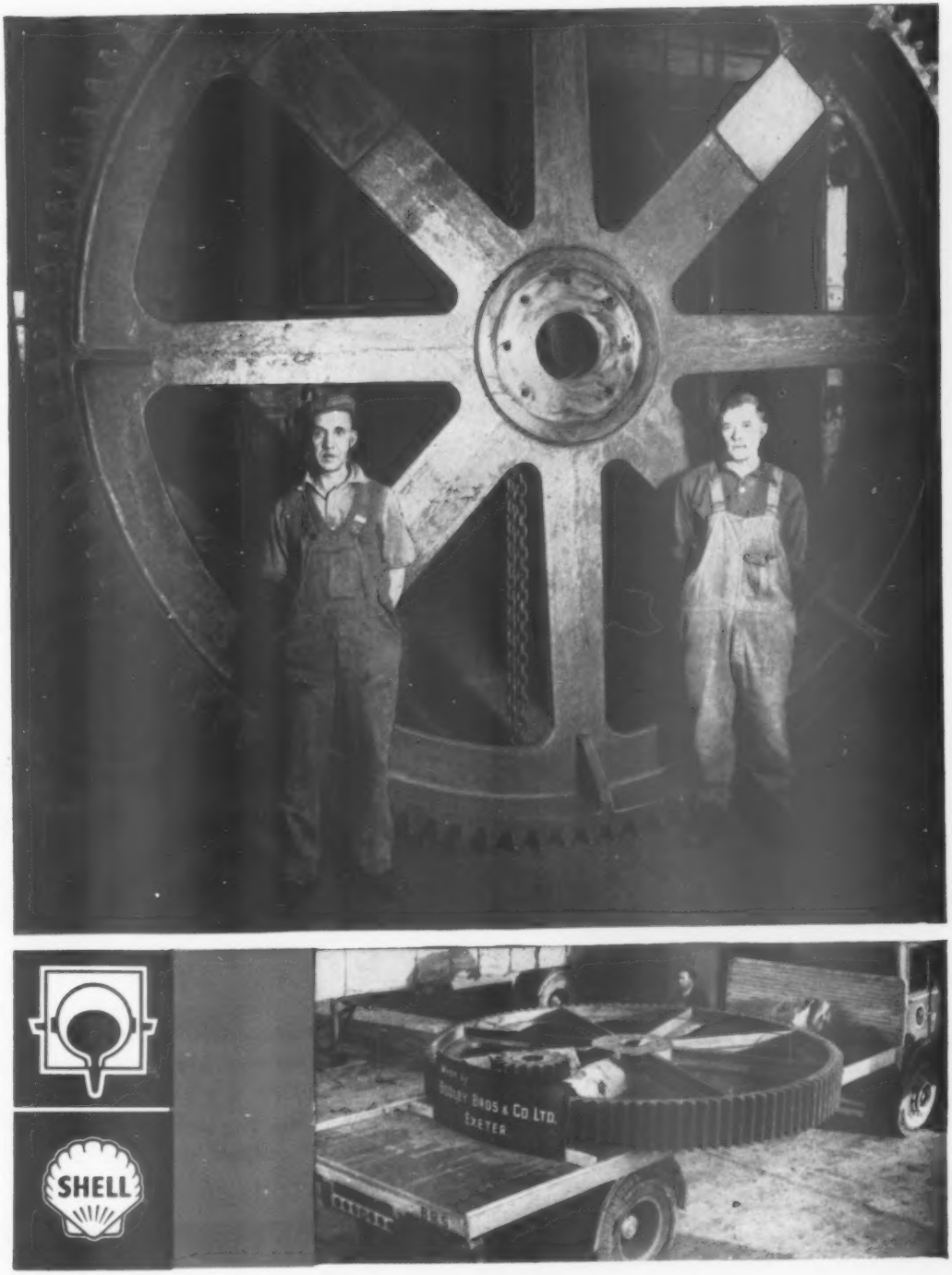
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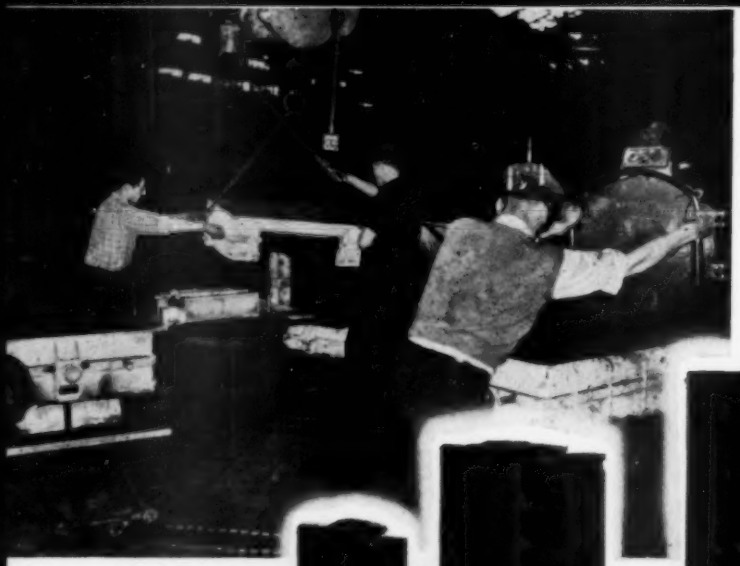

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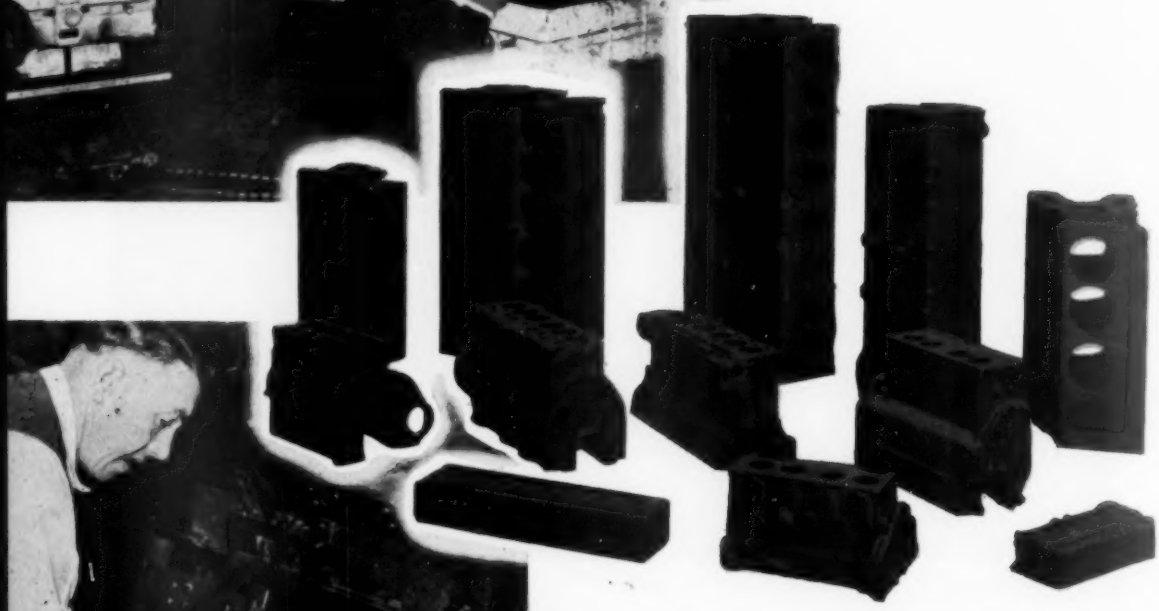

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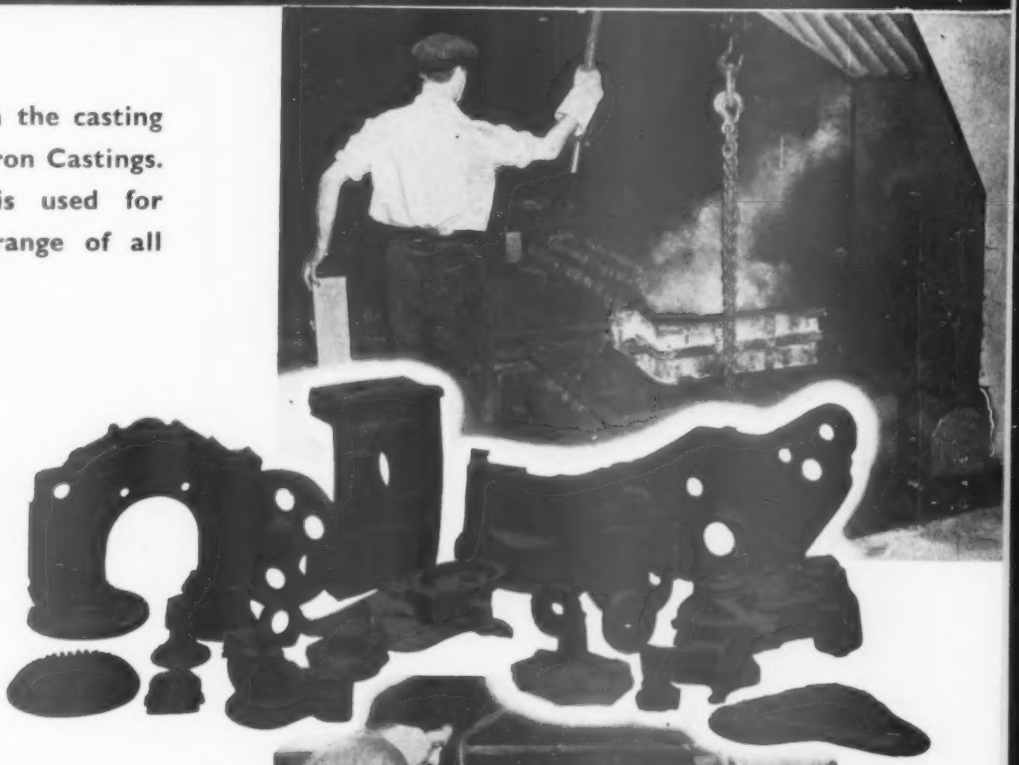

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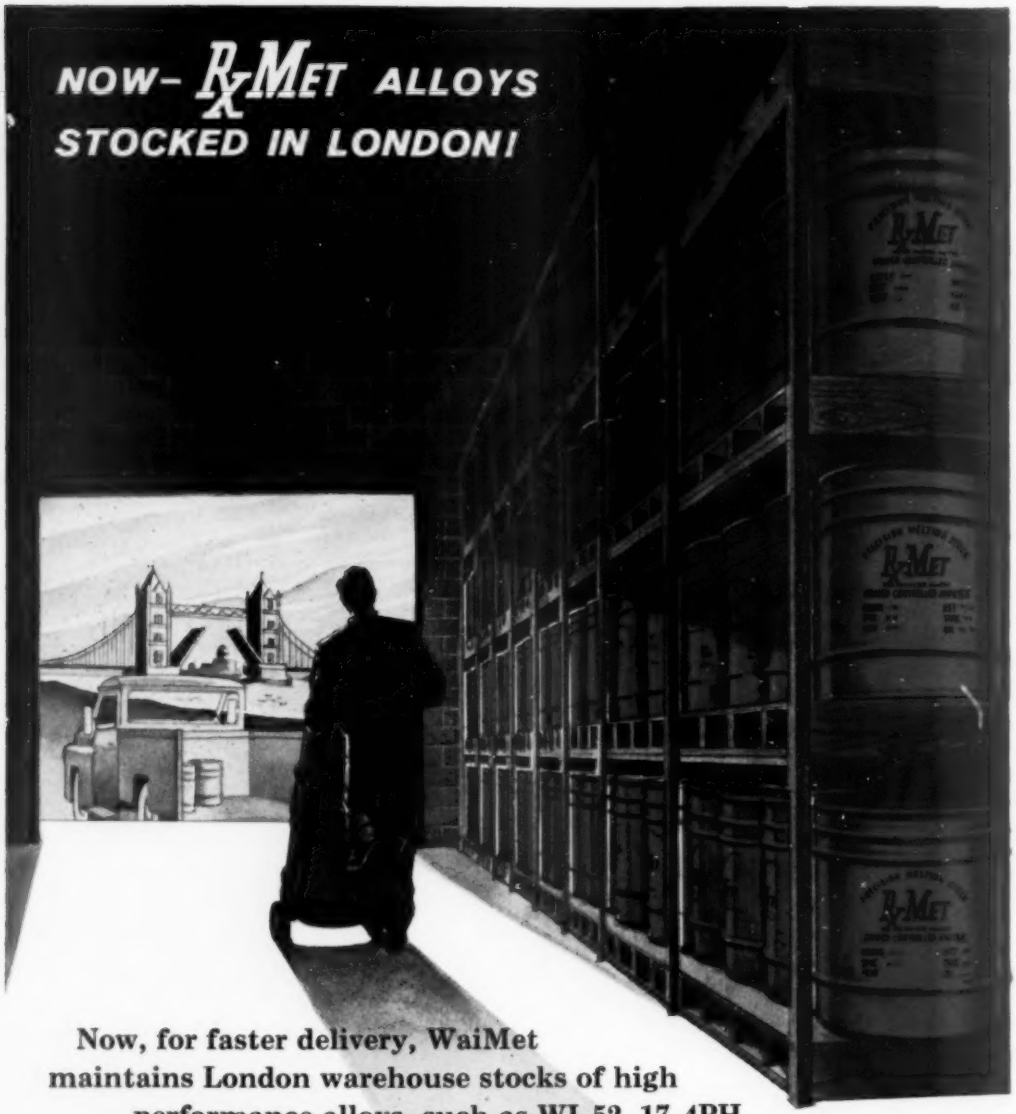

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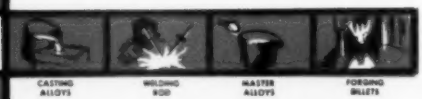

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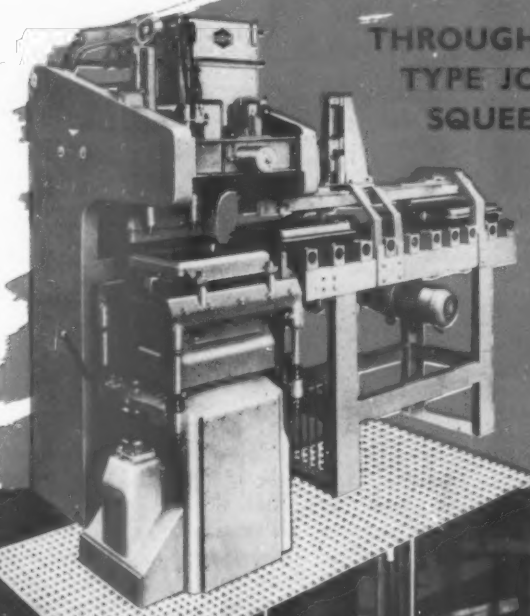

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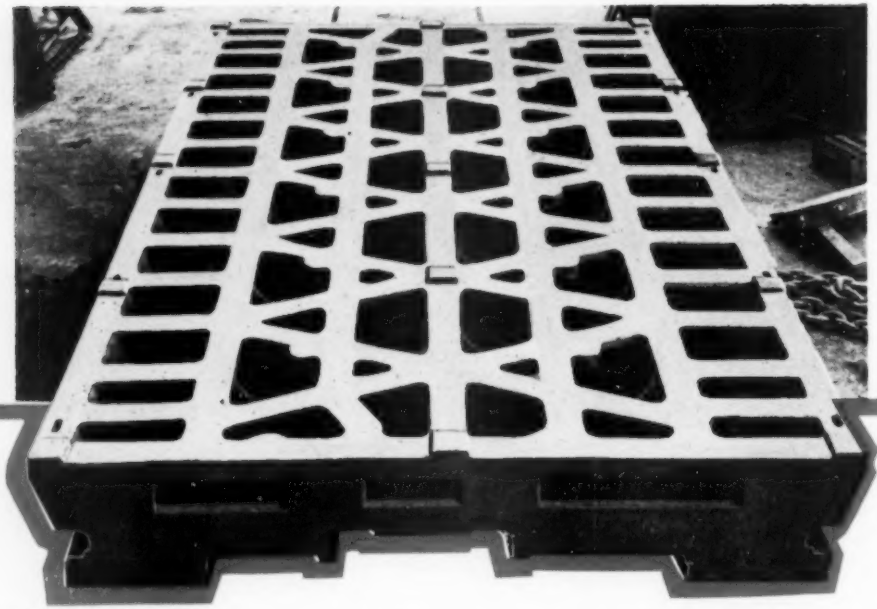

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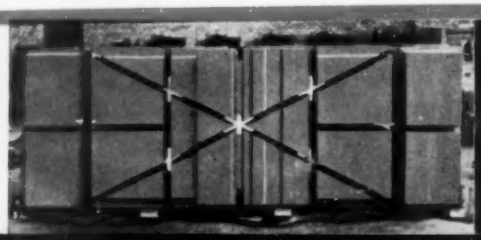

Above: One of the six 30 cwt. cores used in making the 14 ton casting. Each core measured 8′ x 3′ x 1′.

Above: Unstoved cold-set Corovit cores being lifted from the corebox in the green state.

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FOUNDRY TRADE JOURNAL

Vol. 110 June 15, 1961 No. 2323

Established 1902

Incorporating

IRON & STEEL TRADES JOURNAL

Published each Thursday

Annual subscription: United Kingdom 52s.
Abroad 60s. *Payable in advance*

Editorial Director:
V. C. FAULKNER, F.R.S.A., HON.M.I.B.F.

Editor:
A. R. PARKES, M.I.B.F.

Commercial Editor:
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Production Manager:
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Publisher: H. J. DWYER
Circulation Manager: E. T. GRIFFITHS

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G. P. ELLIOTT (Northern Area) 'phone: Altrincham 1334
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The FOUNDRY TRADE JOURNAL is the official organ of the British Steel Founders' Association; Association of Bronze & Brass Founders; the Light Metal Founders Association; Foundry Trades' Equipment & Supplies Association; and the National Society of Master Patternmakers.

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Published by
INDUSTRIAL NEWSPAPERS (FUEL & METALLURGICAL) LTD.

Directors:
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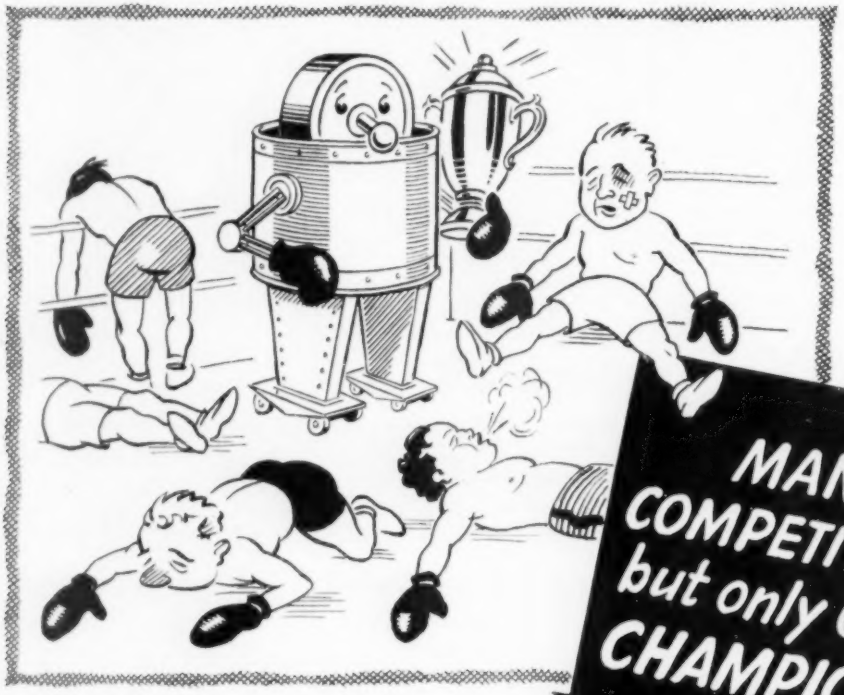

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FOUNDRY
TRADE JOURNAL
Vol. 110 June 15, 1961 No. 2323

Strength and Weakness

Before a proper appreciation can be had of a situation, it is essential for one to be presented with figures giving the existing position. Thus, the British Steel Founders' Association were wise to accumulate data to help their Recruitment and Training Committee to make recommendations to their industry for the amelioration in future years of the calibre of their technical staff. Their Report, which is printed elsewhere in this issue, is quite short, but is based on a thorough survey of the current position. A table is included which lists ten occupations covered in foundry practice and then details the percentage of those engaged in these duties, who have been awarded a City and Guilds of London intermediate and final certificate, a certificate of the National Foundry Craft Training Centre, a diploma of the National Foundry College, or those possessing a university degree; finally, there is a column "any qualification."

It is this last column which is most revealing and from it it is clear in what directions the energies of the industry's training personnel should be directed. The position of the patternmakers in this last column is not too bad, with a figure of 20 per cent., but that of the moulders at 4 per cent. is pitiable. Yet the educational facilities provided primarily for the moulder and coremaker are utilized by other members of the staff and in the other eight occupations listed, the percentages range from three to 37—in this case, job evaluation—the average being 10·9. Again, in this grouping 1·5 per cent. have passed through the NFCTC, where the total attendance has been 40. The recruitment from the National Foundry College has been 28 and yields a percentage of 10·7 reinforced by a further 4·5 per cent. having a university degree. The staff of metallurgical departments is reasonably well qualified, as 78 per cent. have passed one or other of the trade and professional examinations, 33 per cent. having university degrees and 32 per cent. the diploma of the National Foundry College.

Whilst these figures pertain only to steel castings production, they are probably slightly better than the foundry industry as a whole, except perhaps as to the usage of the National Foundry College. The Report, it will be noted, deplores the small proportion of moulders and coremakers holding City and Guilds certificates. Though 30 per cent. of the apprentices to these trades are attending these courses, the percentage failing to obtain a certificate is high. This is due, we believe, not to the fact that they are incompetent craftsmen, but rather to their inability to put their knowledge in writing, due to either faulty elementary education or perhaps that they are inherently just bad "scholars." In the Report from which these extracts have been cited, the steel-foundry industry—being relatively small, compact and well organized—has produced a set of interesting figures which might usefully be taken as a sample census of the technical set-up of the foundry industry as a whole.

Bradley & Foster Golf Competition

The winner of the twelfth annual golf competition organized by Bradley & Foster, Limited, of Darlaston, a member of the Staveley group of companies, is shown in this picture being presented with the T. A. McKenna Cup by Sir Harmar Nicholls, J.P., M.P., former Parliamentary Secretary, Ministry of Works, on June 2. He is Mr. A. Ramskill, assistant manager of Wolverhampton branch office of English Electric Company, Limited.

Nearly a hundred industrialists from all parts of the Midlands competed for the Cup, which bears the name of the president of Staveley Industries, Limited, a parent company of Bradley & Foster. The event was held at South Staffordshire Golf Club, Tettenhall, and was graced by perfect weather conditions. The cup was presented at a dinner in Wolverhampton the same evening held in the Victoria Hotel, at which players and other personnel from the foundry and kindred industries were guests of the company.

Birthday Honours

In the recently-published Birthday Honours List, a number of those honoured include some associated with the foundry industry. General Sir Brian Robertson, lately chairman of the British Transport Commission, has been created a baron; the Rt. Hon. Alfred Robens received a life peerage; Sir John Erskine, chairman of the Fairfield Shipping & Engineering, received a baronetcy; Mr. William K. Allen, chairman of W. H. Allen, Sons & Company, Limited, and Alderman Alfred G. B. Owen, chairman of the Owen Group, both receive Knighthoods. Amongst those receiving the CBE are Mr. C. F. Barnard, vice-chairman, Mirrlees, Bickerton & Day, Limited; Mr. W. L. Burns, chairman, Henry Balfour & Company, Limited, Leven; Mr. R. Sugden, managing director, T. Sugden & Son, Limited, Brighouse, and Mr. G. A. Whipple, chairman, Hilger & Watts, Limited. The OBE has been awarded to Mr. R. J. Richardson, technical director, Brown Lenox & Company, Limited, and the M.B.E. to Mr. W. Branston, assistant blast-furnace manager, John Lysaght's Scunthorpe Works, Limited; Mr. F. D. Ley, director, Ley's Foundries & Engineering, Limited, and Mr. J. Lyon, chief metallurgist, Barrow Steel Works, Limited.

Correspondence

CREDITABLE ACHIEVEMENT

To the Editor of FOUNDRY TRADE JOURNAL

SIR,—In the interesting editorial on *The Times* article on the structure of the ironfoundry industry which appeared in your issue of June 1, reference was made to the increase in output per man/year achieved in British ironfoundries during the last decade. The writer continued: This is indeed a remarkable and noteworthy advance and it would be interesting to see how it compares with the foundry productivity of other manufacturing countries.

The statistics available for making such a comparison are not as complete as might be desired. We know the strength of the labour force in many countries at the beginning of each year, but do not have a continuous series of employment statistics which would enable precise calculation of the average for the year.

Taking this into account, however, the following figures for 1960 for some of the more important European foundry countries may be of interest—the percentage margin of error is shown in brackets: United Kingdom 30½ (negligible), Germany 25 (4), France 25½ (6), Holland 26 (2), Italy 18 (6), tons per man/year.

I show these statistics in rounded figures, and deliberately avoid the term "productivity." It must be remembered, if we attempt to deduce from them the comparative efficiency of these countries, that countries which engage in pipe spinning or ingot-mould manufacture on a large scale would normally show a higher output per man/year throughout the industry as a whole, than countries where output was concentrated in components for the engineering industry.

The evidence, as we have it, shows nonetheless that the structure of ironfounding in Germany and in the UK is sufficiently similar to permit the conclusion that our output per man/year was at least 17 per cent. higher in 1960 than that of the Germans, and to maintain that British ironfoundries are more efficient on average performance than German.

To guard against our becoming complacent, I should add that American statistics suggest that output per man/year in the US foundries was at least 80 per cent. higher than our own. Yours, etc.,

PHILIP MOORE,
CFA Economics and Statistics Officer.

SOHO FOUNDRY

To the Editor of the FOUNDRY TRADE JOURNAL

SIR,—I should like you to know how much I have enjoyed the article on the Soho Foundry in the May 25 issue of the JOURNAL. If you had changed the style at all, it must have been for the worse and I think this article is a model for this kind of subject. Mr. Shore may know of a little handbook published in the 'twenties on the occasion of centenary celebrations for Matthew Murray, of Leeds. I have not seen this book for many years, but I recall an account of members of Boulton & Watt's staff visiting Leeds and trying to attract Murray's employees to Birmingham. In particular I remember a very vivid description of the green-sand practice at that time.

While such articles would not be popular if they appeared too often, I hope you will be able to include them from time to time, particularly if of the standard of the present one.—Yours, etc.,

J. BLACKBURN,
Director and Works Manager.
Bonnington Castings, Limited,

IBF Fifty-eighth Annual Conference

Account of Proceedings at Cheltenham May 15 to 18.

In continuing the general account of the Cheltenham Conference proceedings, the report surveys the remaining social events, includes a note on works visits, and follows with synopses of some of the papers presented.

(Continued from page 734)

In the earlier section of this report on the proceedings of the annual conference organized by the Institute of British Foundrymen at Cheltenham last month, the review covered the social events of the Monday and Tuesday evenings, the daytime Council and committee meetings, annual general meeting, presidential address and the Edward Williams lecture.

Technical Sessions

The technical sessions of the Conference began on the Tuesday afternoon, with six papers presented at two simultaneous sessions in the Pillar Room and the Drawing Room of the Town Hall, Cheltenham. These were continued on the Thursday with a full day's series of meetings, similarly located, at which a further 12 papers and committee reports were presented and discussed.

In general, the attendance at the sessions varied from 30 or 40 to about 100, those on the Thursday being the most sparsely attended. The writer attributes this falling off of numbers not so much to lack of "meat" in the papers as to the approaching end of a busy Conference week. The wisdom is queried of asking members to come back on the final day for heavy technical sessions after the more congenial atmosphere which pervades the excursions for visiting works which took place on the previous day, Wednesday. This order of procedure has been followed for about the last two years, but it by no means receives universal approbation, many members feeling that the programme order of a few years ago, when works visits occupied the final day, is much to be preferred.

In general, discussions at the technical sessions were slow to start and often needed prompting from the chair or by certain well-known members of the audience who invariably have something to say. It might be considered as a future possibility for persons who are known to be interested in particular subjects to be approached beforehand with a view to their opening the discussions on them. This necessity is indicated by the fact that once the "ball was set rolling," most of the Cheltenham discussions had to be curtailed owing to lack of time.

Works Visits*

No fewer than 12 firms in the Cheltenham/Gloucester/Bristol area, most of them foundries, were visited on the second day of the Conference, Wednesday. At each of these, parties of members who had travelled by coach were free to tour the shops, in small parties accompanied by a guide, and for each pair of visits, luncheon or tea was arranged by the hosts.

It is significant that practically all the visits were fully attended and, in fact, quite a few members' applications had to be turned down. This continuing popularity of works visits by the rank and file of the IBF is something which will need very serious consideration if the proposal to divorce works visits from annual conferences is proceeded with. The idea behind the proposal is that the normal social and technical proceedings of a conference can most satisfactorily be housed at places remote from industrial areas, yet where there are few opportunities for works visits. As a corollary to the proposals, it is thought that the annual "Works Visits Day" function of the Institute might be enlarged. There is, however, a danger that without works visits, a conference would attract many fewer delegates.

There is no doubt that once again at Cheltenham the works tours were a huge success and contributed much to the mutual understanding of hosts' and guests' problems. The issue by a firm of a visit invitation to members of the IBF is tantamount naturally to inviting member-representatives from all its competitors and although the right of refusal of individuals is retained by firms, it is very seldom applied. Thus, it is possible to find oneself in a group touring a works comprising the manager of the home plant and managers and executives of all the firm's major competitors. At Cheltenham, the present writer was, in fact, a member of such a group and became full of admiration for what developed. There ensued a complete exchange of quite valuable information between the members of the party, many of whom were making exactly the same type of castings. Surely, no better index of good feeling within the industry could ever be found—such a tremendous contrast with years ago! It was quite clear also that the host received just as much information as he gave.

Dinner/Dance and Cabaret

Mr. D. A. Richards, the new president, presided over about 200 members, wives, and guests at the dinner/dance and cabaret held on the evening of Thursday, May 18, also in the Town Hall, Cheltenham. This was an informal affair, the top table set-up including Mr. John Bell (past-president) Mr. R. F. Horton (junior vice-president), Mr. A. E.

* All the works visited during the run of the Cheltenham conference were described in the JOURNAL issues of May 4 and 11.

Twenty-nine IBF members attended the works visit to Newman Industries Limited, at Yate, near Bristol, and this photograph shows a group of them watching core placing in the main foundry.

Peace (past-president), and Mr. G. R. Shotton (immediate past-president), all of whom were accompanied by their ladies. The occasion served also to honour the hosts from the works visited the previous day.

There were no formal speeches, dancing to Lew Stone and his Regency Orchestra led by Ernest Lockett was intermingled with dining and everyone found this a most enjoyable finale to the week's proceedings. A cabaret show included Mr. Harold Taylor (comedian, juggler), Miss Joyce Mandre (musical-comedy star) and Franklin and assistant (with their disappearing doves).

Conclusion

Although the Thursday evening's dinner/dance ended the proceedings of the Conference, it is not fitting to conclude this report without mention of the special excursions arranged for the ladies.

Their programme on Tuesday has already been referred to: on Wednesday, they left Cheltenham by coach in parties for one of four tours; *viz.*, to the Cotswolds, Gloucester Cathedral and Berkeley Castle, a visit to Bath or to Prinknash Abbey and Pottery. That evening, they were able to participate, if they wished, in the visit to the Everyman Theatre, Cheltenham, to see a performance of "The Naked Island" by a Coventry company of players. Although about 200 booked for this show, judging from the comments afterwards, it was not to everyone's taste. On Thursday, May 18, further tours were arranged for the ladies, one to Blenheim Palace and the other to the North Cotswolds including a visit to Snowshill Manor, both of full day's duration.

It says much for the Conference organization that both the members' visits and the ladies' programme were carried through without a hitch of any kind and all delegates were loud in praise of the meticulous arrangements made for their comfort.

In its summation, it may be said that the IBF 58th annual conference was a complete success, the smaller number attending in no way detracted from its value to all. For its supervision and detail working out, both the head-office staff, led by Mr. Lambert, and the local committee, stewards and other helpers, are much deserving of praise.

TECHNICAL PAPERS

It is proposed in this and following issues of the JOURNAL briefly to review the various papers presented at the Conference in respect of their technical content. Naturally, it is impossible to cover all the many facets of foundry practice presented, the following reports being more in the nature of a personal selection from the proceedings. The discussion notes likewise—where recorded—do not claim to be exhaustive, though they are probably representative of the main points raised.

Investment Casting Nickel-base Alloys under Vacuum Conditions

By D. F. B. Tedds, F.I.M.

(Bristol Siddeley Engines, Limited)

This paper outlined the development of nickel-base alloys and detailed well-known compositions and the stress/rupture properties of wrought *versus* cast material. The Author also dealt with the limitations of the wrought product when employed under the most severe conditions and the reasons why casting was a logical production process. He said that the use of vacuum-melting techniques was mandatory with nickel-base alloys to which additions of aluminium and titanium had been made, so as to prevent oxide inclusions within the castings.

Mr. Tedds then gave details of two furnaces—one high-frequency and the other indirect-arc—together with typical melting and casting procedures. Considerable importance was attached to the necessity of adequate preventive maintenance of the furnace equipment and the compiling of

suitable work-sheets in order to obtain the necessary metallurgical quality. Dimensional tolerances of castings must also be consistent and the Author gave a typical example of the requirements of a cast turbine-rotor blade.

Application of Shell Moulding to Copper-base Alloys

By G. W. Brown, A.I.M.

(Newman Hender & Company, Limited)

Before presenting a summary of this paper at the Conference, Mr. Brown said there were several amendments which must be made, particularly for the benefit of those members who would be visiting Newman Hender's works during Conference week. These amendments were: No weighting of shell moulds was now employed; an increased number of vacuum closing machines were now in operation; as a result of re-planning and altered layout, the shell department of his works was now capable of producing a maximum of 560 moulds and 3,000 cores per day; a substantially greater proportion of the daily output of the works was thus effected by shell moulding; a continuous production line was now maintained for the process, and no major alterations had been found necessary in sand preparation, " biscuit " or core manufacture. These items, the Author stressed, should be taken into account when consideration was given to his paper—which was actually written some 12 months' ago.

Growth of Applications

Passing on to introduce his paper at the meeting, Mr. Brown said that shell-moulding was first introduced into his company seven years ago and was now the established medium for the production of approximately 35 per cent. (see earlier) of the company's production of bronze castings for valves for use in the chemical, gas and hydraulic fields. Originally, he said, shell moulds formed the greater proportion of daily output from resin-bonded sand, but nowadays the development of shell coremaking within the organization permitted of the production of the necessary cores to maintain the production line, the figure being some 3,000 per week.

Illustrations accompanying the paper indicated the type of products produced and the equipment employed.* A pre-coating plant was used in sand preparation, some 15 tons of sand being treated every week. Routine laboratory checks were made to ensure maintenance of sand quality, these checks on the prepared sand being for resin content, melting point and tensile strength.

Resin/Sand Mixtures

A low clay-content in the sand was desired, since this permitted of the use of lower resin content; current practice was to use a mixture with five per cent. resin content for both shells and cores. The Author said that some foundrymen might question the necessity for the use of as high a resin content as five per cent. for cores, but it was the experience of his company that this figure allowed of the satisfactory production of many small delicate cores where handling difficulties would be met with if sands of lower resin-content were adopted. Experience had also shown that for such cores, a minimum content of three per cent. was essential, but the amount of five per cent. was found to give the most economic results with regard to both moulds and cores. A local sand was employed, of 0.5 per cent. clay content, with 95 per cent. of the sand retained on the 100, 120 and 200-mesh sieves. The sand mixture consisted of 224-lb. of sand, 11 lb. of phenol-formaldehyde resin, 20 oz. hexamine and 7 oz. of release agent; the milling time using cold sand was 15 min., and the melting point of the mix should be a nominal 210 deg. F., although a working range of 208 to 215 was quite satisfactory.

The Author said that correctly-cured sands would show a tensile stress of approximately 100 lb. per sq. in. for each one per cent. resin present, but overcuring could reduce this value by as much as 50 per cent.

" Biscuit "-making

Three biscuit-making machines were employed in the foundry and six coreblowing machines completed the production equipment, the Author said. Electrical heating was used in the coreblowing machines and on one of the biscuit-making machines. Curing of the cores was carried out at a temperature of 260 to 280 deg. C.; one biscuit-making machine employing electrical curing was operated at 320 deg. C., whilst the other two units (which employed gas curing) operated at 250 deg. C. The use of temperatures in excess of those quoted could result in burning of shells and cores—especially at sharp edges—with resultant friability.

Assembly

Mr. Brown said that assembly of the moulds was made immediately the biscuits were released from the machines, hot-to-hot adhesive being applied and the moulds closed under vacuum. The assembled moulds were then stored in portable racks to await delivery to the pouring station in the foundry. In order to prevent entry of sand abraded from other biscuits into the mould cavity during transit or storage, the pouring cups were covered with paper caps which could easily be removed when the moulds were ready for pouring.

The Author stressed that no weighting of moulds was now employed, various other methods of securing the moulds—including spring-loaded clamps and covering with shot enclosed in chain-mesh bags—all had been tried, but each showed some disadvantages. Particularly, spring-loaded clamps had resulted in moulds being damaged by over-stressing at the point of contact.

Next dealing with patternwork, the Author said both gunmetal and aluminium-alloy patterns had

* See JOURNAL, May 11, 1961, p. 599.

been employed, but present practice favoured aluminium, due to the excellent finish which could be obtained, in addition to reduced metal costs and easier handling of the lighter plates. Few alterations had been found necessary in pattern layout as compared with normal sand practice, but such obvious precautions as avoiding the running of metal against cores or areas where sand wash could occur had to be observed.

Mr. Brown stated that pouring temperatures of the order of 1,200 deg. C. were employed for L.G 2 alloy, which formed the bulk of the company's production, although some items were produced in other copper-base alloys, notably L.G 3. Special ladles were now employed, which permitted of the distance between ladle spout and cup when pouring being reduced to a minimum, thus reducing any tendency to turbulence. A close watch was maintained over daily production, both by the laboratory and foundry personnel, and an immediate investigation made into any irregularity noted.

Finally, the Author expressed his thanks to the directors of his company, for the encouragement given during the preparation of the paper; he made acknowledgment to several colleagues for helpful comment and criticism and for assistance in the production of the illustrations.

Gravity-die-casting in a General Foundry

By D. Redfern and (Mrs.) I. E. Brown

(Douglas (Kingswood), Limited)

This paper related the complete process of gravity-die-casting of cylinder and crankcase castings for compressors and exhausters now in production at the Authors' works. Specifications and general characteristics of the alloy used were given and the casting properties were then dealt with in detail.

Commenting on the alloy used (LM16WP) the Authors gave the following composition and mechanical properties: Cu 1.0 to 1.5, Si 4.5 to 5.5, Mg 0.4 to 0.6, Fe 0.6 max., Mn 0.5 max., Ni 0.25 max., Zn 0.1 max., Sn 0.05 max., and Pb 0.05 max. per cent. Mechanical properties required when chill-cast varied from 13 to 15 tons per sq. in. min. at an elongation of 3 per cent. min. Turning to casting properties, the Authors stated that the alloy did not present undue difficulties; the fluidity was not as great as that of the eutectic silicon alloys and slightly higher casting temperatures were necessary. A certain tendency to hot-tearing had been encountered, but this could be overcome by good die design.

Effect of Metal/Mould Reactions and Section Thickness on the Properties of Gunmetal Castings

By F. Hudson, F.I.M.

(International Nickel Company (Mond), Limited)

Although extensive investigations had been carried out on the influence of metal/mould reaction on the properties of thin-section gunmetal castings, the Author said that very little information existed for medium- and thick-section material. This paper described an investigation of this subject, using very large tensile test-bars cast in five different alloys under conditions promoting a variable degree of metal/mould reaction. The results obtained indicated that metal/mould reaction had an important bearing upon the sensitivity of these alloys to variation in casting section.

When metal/mould reaction was suppressed, the Author stated, the mechanical properties of thick-section gunmetal castings, containing more than seven per cent. tin and less than three per cent. lead, were nearly equivalent to those obtained from separately-cast test-bars. In the case of alloys containing less than seven per cent. tin and more than three per cent. lead, acknowledged as being most suitable for the production of castings which had to withstand pressure, the properties of thick-section castings were well below those obtained from separately-cast test-bars, even when metal/mould reaction was suppressed. This fall in properties in leaded gunmetal, due to the weakening effect of massive grain-boundary lead segregates, could be corrected by the addition of two per cent. nickel, enabling maximum strength and pressure-tightness to be obtained. The Author said that results confirmed that an alloy containing six to seven per cent. Sn, three to five per cent. Zn, three to five per cent. Pb and one and a half to two and a half per cent. Ni, and the remainder copper, was capable of producing thick-section castings having properties equal to those obtained from 88/10/2 gunmetal and with higher density.

Reviews of other papers presented will appear in a future issue of the JOURNAL.

Foundry Workers to Seek 40-hour Week

Motion calling for a "vigorous fight to be made for a 40-hour week now, without strings and any reduction in wages" was carried unanimously at the annual delegate meeting of the Amalgamated Union of Foundry Workers at Yarmouth recently. The motion said that the conference felt that with the Confederation of Shipbuilding and Engineers Unions having achieved the 42-hour week, a 40-hour week should be among the foremost of the union's claims.

The chairman, Mr. F. Hollingsworth, spoke of the effects of automation in bringing greater production with less labour, and of the need for higher wage rates and shorter hours.

The conference also approved a motion asking its executive to support the demand for a separate Trades Union Congress for Wales. A Welshman, Mr. E. Collins, said there were 500,000 trade unionists in South Wales. He was supported by a Scottish delegate, Mr. W. Mack, who said Scotland and Ireland had their own TUC's, and each nation had its own economic problems.

UNEMPLOYMENT in the UK fell between April and May. There were 299,272 registered unemployed on May 15, or 1.3 per cent. of the estimated number of employees, compared with 1.5 per cent. in April, and the same figure in May, 1960, according to Ministry of Labour figures. Of the total unemployed, 282,233 were wholly unemployed, and 17,039 temporarily stopped from work.

IBF London Branch Golden Jubilee

Celebration of 50 years' Technical Co-operation at Hurlingham on May 30.

Although the London branch of the Institute of British Foundrymen began its 50 years of existence in March, 1911, the celebration of its Jubilee was deferred until May 30 this year. At a gathering of members and guests, Mr. D. A. C. Hutchison the then immediate past-president took the chair at a dinner/dance and cabaret show at the Hurlingham Club, London.

The function was attended by about 200 members and guests. Seated at the top table with Mr. Hutchison were Mr. N. C. Macdiarmid (managing director, Stanton Ironworks Company, Limited), Mr. D. A. Richards (president of the IBF), Mr. V. C. Faulkner (past-president), Mr. Guy D. Hadley (Upper Warden, Worshipful Company of Founders), Mr. G. R. Shotton (immediate past-president) and Dr. A. B. Everest (past-president), all of whom were accompanied by their ladies. Other official guests attending the function were Mr. H. Wilson-Wiley (Clerk to the Worshipful

Photographs taken during the IBF London branch Golden Jubilee celebrations at Hurlingham. (a) (from left to right) Mr. D. A. C. Hutchison (London branch immediate past-president), Mrs. Hutchison, Mrs. Richards and Mr. D. A. Richards (IBF president); (b) happy group at one of the tables; (c) Mr. R. F. Horton (IBF junior vice-president), Mrs. Horton, Mr. G. R. Shotton, Mrs. Shotton, Dr. A. B. Everest and Mrs. Everest; (d) Mr. and Mrs. J. McP. Niven being received by Mr. and Mrs. Hutchison.

Other scenes at the Golden Jubilee dinner. (Left) the chief guest, Mr. N. C. Macdiarmid (managing director, Stanton Ironworks Company, Limited) and Mrs. Macdiarmid being received by Mr. and Mrs. Hutchison and (right) Mr. H. E. Williams (president, Wales and Monmouth branch) and his wife being received by Mr. and Mrs. Richards.

Company of Founders), Mr. R. F. Horton (IBF junior vice-president), Mr. G. Lambert (secretary), Mr. E. Charlton (president, Newcastle-upon-Tyne branch), Mr. G. W. Fearfield (president, East Midlands branch), Mr. T. Hurst (president, Teesside branch), Mr. N. P. Newman (hon. treasurer), Dr. R. V. Riley (president, Sheffield and District branch), Mr. D. P. Smith (president, Birmingham, Coventry and West Midlands branch), Mr. A. Sutherland (president, Lincolnshire branch), Mr. G. R. Webster senior vice-president) and Mr. H. E. Williams (president, Wales and Monmouth branch). The above included all the presidents of other branches of the Institute who were able to attend, in addition to members of the executive committee and other principal officers of the Institute, along with representatives of the Worshipful Company of Founders.

It had been decided to organize the event as an informal social evening giving plenty of opportunity for members and their ladies to circulate and compare present and past events in the light of the branch. Thus, speeches at the dinner were kept to a minimum, the principal one (following the Loyal Toast proposed by Mr. Hutchison) being "London Branch of the Institute" put forward by Mr. N. C. Macdiarmid, the principal guest. In a congratulatory manner, he referred to the achievements of the branch over the years, the response being made by the chairman. To fill the need of the occasion for placing on record, the history of the first 50 years of the branch's existence, Mr. V. C. Faulkner* had acted as historian and prepared an account of some of the principal events which was printed in the menu cards (see extracts below). The holding of the event in the early summer at Hurlingham made it possible for members and guests to stroll in the floodlit grounds of this veritable oasis within the precincts of the Metropolis and the space available for reception, dining and dancing in separate halls added much to the enjoyment of all. The arrangements were made on behalf of the branch by Mr. W. R. Buxton, honorary social secretary, the FOUNDRY TRADE JOURNAL was host for cocktails and Mr. L. A. S. Harbourne in charge of the admirable stewarding. Entertainment during the evening was provided by the following artists from the Guildhall School of Music—Miss Lorna Elias (soprano), Miss Patricia Beech (contralto), Mr. J. Irons (tenor) and Mr. Benjamin Luxon (baritone), the accompanist being Miss Sonia Levy. Dancing until the celebrations closed at 1 a.m. was to music provided by Tommy Kinsman and his orchestra.

* Mr. Faulkner is uniquely qualified to act as branch historian. He joined the IBF in 1908 while based in Sheffield and during his forty years as Editor of the FOUNDRY TRADE JOURNAL (from 1920) was successively branch secretary, branch president, national president (1926), and then branch secretary again for a further period during the 1939-45 war

The First Fifty Years

The following extracts have been culled from Mr. Faulkner's History of the Branch and contain the "highlights" of the 50 years:—

When the idea was first mooted of forming a London branch of the then British Foundrymen's Association (itself only seven years old), those foundrymen initiating the project were fortunate in being able to call on the experience of branches already formed in Birmingham, Manchester, Scotland and Sheffield. The two men who sought to apply this in London were Mr. James Ellis and Mr. James Oswald, M.I.MECH.E., the proprietor of John Oswald & Sons, foundry at Nine Elms. They organized an inaugural meeting of London-area founders at the Institution of Mechanical Engineers on February 24, 1911. Though George V was on

the throne, the conditions in London were still Edwardian and when many outstanding attractions in the West End were available, it says much for the serious-mindedness of the members of the foundry industry that no fewer than 50 turned up to support the two pioneers. Mr. (later Dr.) P. Longmuir was in the chair as president of the British Foundrymen's Association. In support were Mr. Robert Buchanan, the "father" of the Association, and Mr. H. Pilkington, a past-president. A strong committee was formed with Mr. Oswald as president and Mr. T. Murphy, a foundry supply merchant, as honorary secretary. The first meeting open to the area's general membership was held at the beginning of March that year in Cannon Street Hotel (now an office block). It attracted an attendance of over 100—an exceptionally large gathering for the period and only exceeded in comparatively recent times. Dr. Longmuir gave the inaugural lecture, on alloys of brass and bronze, and the London branch was well launched.

The session 1912/1913 produced a galaxy of star lecturers, amongst whom were Professor Sir Henry Carpenter, Professor Thomas Turner, Mr. Harry Brearley (the inventor of stainless steel for cutlery), Mr. F. J. Cook and Mr. George Hailstone, whose promising career was cut short by an early death. On December 9, 1912, the first annual dinner was held at the Holborn Restaurant, which has only recently been demolished. The chief guest was Professor Turner, who correctly prophesied that London was destined to become the headquarters of the Association. The session's programme included two works visits, one to Fraser & Chalmers, at Erith, and the other to George Kent, Limited, Luton. Here, the annual meeting was held and Mr. J. W. Horne, B.SC., who was then the metallurgist at Fraser & Chalmers, was elected president of the branch. There was a second annual dinner, again at the Holborn Restaurant, with Dr. Rosenhain, F.R.S., as the chief guest.

Until the second session, the lectures were mainly theoretical, but then a change was made and two really practical papers were presented, one on oil firing and the other on the manufacture of ships' propellers.

The 1913 annual general meeting elected Mr. J. Ellis as president and he remained in office for two years; it is interesting to learn that at this period the membership was drawn from as far apart as London, Luton, Southampton, Portsmouth and Yeovil. Meetings were at that period being held at the Northampton Polytechnic, London, and despite the outbreak of war, an annual dinner was held, the toast of the Association being given by M. P. Delelande of the *Association Technique de Fonderie* (the French counterpart of the IBF). The London branch was by then the second largest and from the financial angle led all other branches. Unfortunately, at about that time, Mr. Murphy resigned the secretaryship and thereafter a gradual decline set in.

Between Two Wars

By 1921, the ebb tide of the London branch had reached its limit, when a general meeting attended by a handful of members resolved itself into a re-constituted Council. Mr. H. O. Slater was appointed president and the writer as honorary secretary. The body thus formed became the nucleus of a renaissance of the branch, the end of which is by no means in sight, and it included, in addition to Mr. Slater, such enthusiastic people as Mr. Wesley Lambert and Mr. G. C. Pierce. Expenses of running the branch were drastically reduced and an annual dinner was organized at a Soho restaurant. This was attended by fewer than 50, but graced by a few quite important guests. From this time onward, the branch made substantial and continuous progress. The year saw the first joint meeting with the Institute of Metals, a feature which has appeared in the branch programme ever since.

Next year (1922), ground was broken by having a foreign lecturer, Mr. E. V. Ronceray, to present a paper. Others who followed later were Dr. Werner, the president of the German Foundry Employers' Association, and Dr. Guido Vanzetti from Italy.

Out of the "Oyster"

Amongst politicians who were guests were the Rt. Hon. Arthur Henderson, P.C., at one time Foreign Secretary; Sir Gervaise Rentoul, M.P., Viscount Lymington, Sir Patrick Hannon, M.P., Mr. J. H. Thomas, P.C., and Lord Meston, K.C.S.I. When Mr. C. H. Kain, of Lake & Elliot, Limited, was president, he surprised the guests by enclosing the menu in neat oyster-shell castings. During the presidency of Mr. V. Delport, the first contact was made with the Worshipful Company of Founders, the Master then being the guest of honour. A popular guest at this time was Mr. E. J. Fox, managing director of Stanton Ironworks Company, Limited. Amongst other industrialists invited was Berkeley Sheffield, Bt.

Considerable enterprise was shown in the field of overseas visits. In 1930, Mr. A. S. Beech (Foundry Equipment, Limited) organized a trip to Paris and the North of France; the following year Mr. J. W. Gardom arranged a visit to Cork Works of Henry Ford & Sons, whilst in 1937 the then honorary secretary, Mr. H. W. Lockwood, was responsible for a very interesting tour of Belgian foundries.

The branch had its first responsibility for organizing international visits in 1923, when a large party of Americans visited this country on their way to a Paris conference; ever since then a substantial share of the work of preparing and carrying through the programme of these events has fallen on its Council and members. The first large international congress was held in 1929 when Mr. Wesley Lambert, C.B.E., was president, the next came in 1939 when Mr. W. B. Lake, J.P., occupied that position.

In 1926, a junior section was organized and did well for about four years, a young lady, Miss Marjorie Pittack, being extremely energetic in its conduct. In 1936, London formed its first external section, following a meeting of members and prospective members at Ipswich. The East Anglian

This group of London-area foundrymen—bearing the somewhat lean and hungry look of the post-war period—was photographed during a branch visit to Lake & Elliot, Limited, at Braintree about 15 years ago. A number of present-day members and officers of the branch and Institute can be distinguished.

section, as it was named, has prospered ever since, and celebrates its Silver Jubilee this year.

The War Years

After a few months of inactivity following the outbreak of war in 1939, meetings were resumed under the enthusiastic leadership of the then branch president, Mr. Barrington Hooper, C.B.E. In 1941, the move of Mr. H. W. Lockwood to Birmingham brought the writer back to the office of honorary secretary of the branch, to fill the vacancy, after an interval of 20 years. He served under four very enterprising presidents, Mr. Hooper, Mr. R. B. Templeton, Mr. Lockwood, and Mr. J. F. Kayser, and during this period the membership was doubled. Because of the blackout, there were no evening meetings held and the few social events were confined to luncheon parties. A Christmas luncheon was held at the Dorchester in 1941. In the following years, complimentary luncheons were given to Mr. R. B. Templeton, Mr. Dan Sharpe, Sir William Griffiths and Mr. J. W. Gardom. Some of the difficulty of finding lecturers during the war was overcome by an exchange of papers with the Metropolitan Chapter of the American Foundrymen's Society. Probably the first "Brains Trust" ever held under the auspices of the Institute was organized during this period and was an outstanding success. Other innovations were a short-paper competition for members who had joined since the war, and a mock trial of castings *versus* weldings, Mr. J. P. P. Jones winning the first prize. There was only one works visit during the war and that was to Kent Alloys, Limited.

Later in the war, as a result of the efforts of Mr. John Pike of High Duty Alloys, Limited, a series of technical meetings were held in Slough. These resulted towards the end of 1943 in a new section being formed in that town.

At the end of the war, the branch membership stood at a total of 525.

Post-war Period

Many members are familiar with the post-war advances made by the branch. These in general have been characterized by an increasing tempo in the social activities. Mr. Hooper organized a tour of the Belgian foundries as soon as travel conditions made this possible. Then later, with the late Mr. W. G. Mochrie, Mr. A. R. Parkes was responsible for two trips to France, one to the North and the second to Paris. Nowadays, because of the increasing attendance of members at the annual International Foundry Congress, branch excursions overseas seem less in demand. The annual dinners have now become dinner/dances, but the old-fashioned "stag" parties created on the initiation of Mr. Kain have been carried on and become annual popular events. Since the war, also, two more sections have been created, both on the initiative of local members (fostered by Mr. Mochrie)—one at Southampton and the second to cater for the Bedfordshire/Hertfordshire areas. These have been outstandingly successful and well maintain the branch's high standard of technical and social activities. Once again, in 1955, the London branch bore the brunt of the detailed organization of the International Congress in London, the largest to date and over which Dr.

A. B. Everest presided with such distinction.

From then to this Jubilee Year, steady progress has been achieved, until to-day it can be claimed that the London branch is the largest regional organization in the world catering for the study of metals and cognate subjects.

Moscow Travellers

Mr. J. Hufton (centre), technical director of Stone-Wallwork, Limited, Mr. N. Fisher (left) managing director of Universal Pattern and Precision Engineering Company, Limited, and Major N. Tree shown leaving London Airport for the Moscow Trade Fair (May 19 to June 4). Apart from viewing the show, they intended to explore trade possibilities with Russia.

New "Brasenose Knocker"

T. Gibson & Sons (Stamford), Limited, whose foundry is in Broad Street, Stamford, Lincs., are making a reproduction of the Brasenose Knocker which for many years was on the gate of the premises in St. Pauls Street, Stamford, to which the Oxford students from Brasenose College went in 1333. They took the original knocker with them but two years later they were forced to return to Oxford leaving the knocker behind but in 1890 it returned to Oxford. The new knocker will be an exact reproduction of the old one and will be fixed to the old gate in St. Pauls Street; a special journey having been made to Oxford to get all the details required for the foundry work.

ABOUT 900 OF THE LIFE-MEMBERS' SECTION of the sports club of the English Steel Corporation, Limited, who are retired employees of the firm, went from Sheffield on their annual outing to Bridlington on June 7.

British and World Shipbuilding

Lloyd's Register Returns for March Quarter

Steamships and motorships of over 100 tons gross under construction in Great Britain and Northern Ireland at the end of March, according to Lloyd's Register Shipbuilding Returns, totalled 249 ships of 1,610,647 tons gross. This is 83,541 tons less than the previous quarter and is the lowest figure since December, 1945. The highest post-war figure was 2,345,408 tons at the end of 1957. The total comprises 88 ships of 590,162 tons fitting out afloat, and 161 of 1,020,485 tons still to be launched.

Commenced during the quarter were 58 ships of 295,823 tons; launched, 65 of 343,222 tons; completed, 67 of 381,162 tons.

Vessels under construction included 41 steamships of 751,996 tons and 208 motorships of 858,651 tons. In Commonwealth countries there were under construction five steamers of 86,538 tons and 45 motorships of 130,173 tons. Oil tankers total 41 ships of 721,921 tons, which is 84,606 tons less than the December quarter, and represents 44.8 per cent. of the total tonnage under construction in this country. Total construction in the principal districts is shown in Table 1.

TABLE 1.—*Shipbuilding Construction in Hand in Principal Districts of Great Britain and Northern Ireland.*

District.	March 31, 1961.		December 31, 1960.		March 31, 1960.	
	No.	Gross tonnage.	No.	Gross tonnage.	No.	Gross tonnage.
Aberdeen ..	13	13,710	13	7,812	18	8,869
Barrow ..	2	51,500	2	51,500	3	92,500
Belfast ..	12	228,189	12	226,285	15	282,840
Bristol ..	1	2,000	3	4,016	3	2,250
Clyde:						
Glasgow ..	47	323,179	50	346,952	53	490,113
Greenock ..	17	126,236	17	108,054	22	157,196
Dundee ..	3	12,400	3	12,400	4	14,158
Hartlepool ..	2	19,600	2	19,600	2	22,600
Hull	42	15,830	38	14,476	34	13,891
Leith	8	42,590	5	27,610	10	46,634
Liverpool ..	7	98,630	6	71,830	8	113,963
Middlesbrough	8	144,530	10	183,120	8	134,610
Newcastle-upon-Tyne ..	29	303,020	35	385,161	33	362,299
Southampton ..	6	7,263	11	8,116	12	11,216
Sunderland ..	22	214,654	20	220,094	21	199,018

Sizes of steamships and motorships under construction at the end of March in Great Britain and Northern Ireland included the following:—100 to 500 tons, steam nil (motor 88); 500 to 1,000 tons, steam nil (18); 1,000 to 2,000 tons, steam 10 (14); 2,000 to 4,000 tons, steam 2 (4); 4,000 to 6,000 tons, steam 2 (8); 6,000 to 8,000 tons, steam nil (18); 8,000 to 10,000 tons, steam nil (26); 10,000 to 15,000 tons, steam 5 (25); 15,000 to 20,000 tons, steam 2 (6); 20,000 to 25,000 tons, steam 3 (1); 25,000 to 30,000 tons, steam 5 (nil); 30,000 and under 40,000 tons, steam 8 (nil); 40,000 tons and above, steam 4 (nil).

Of the steamships and motorships under construction throughout the world at the end of March, 4,183,230 tons (47.9 per cent.) are to be classed with Lloyd's Register. Of this total 1,545,574 tons, representing 96.0 per cent. of the tonnage being built there, are at yards in Great Britain and Northern Ireland.

MR. THOMAS STOREY has resigned his position as chairman and managing director of Thomas Storey (Engineers), Limited, of Stockport, which he founded in 1936.

Equipment and Supplies

Pig-iron

Arrangements have now been made for the marketing in this country of a special Canadian pig-iron known as Sorel-Metal. It is being handled by Ertel Ore, Limited, Adelaide House, King William Street, London, E.C.4. Basically, the new iron is a by-product of the titanium smelter of Quebec Iron & Titanium Corporation. It appears that in the continuous titanium reduction process, the FeO constituent of the ilmenite ore is only partially reduced to iron, leaving alloying and tramp elements in the slag, and thus the iron produced is of high purity. As tapped, it has a carbon content of 2.25 per cent. and can then be carburized to about 4.25 per cent. C., while at the same time being desulphurized by calcium-carbide injection to below 0.020 per cent. S. Two grades are being stocked at Liverpool, typical compositions being:—Grade F 1 (high-carbon) C 4.25, Si 0.08, Mn 0.009, P 0.025 and S 0.015 per cent.; grade D 1 (low-carbon), C 2.40 and S 0.025 per cent., the other elements being similar. The metal is stated to be particularly suited for spheroidal-graphite iron production, the residual elements being quoted as Cr 0.035, Cu 0.025, Ni 0.085, Ti 0.020, V 0.025, Co 0.040, Al 0.015, W 0.001, Mo 0.001 and Sn 0.001 per cent.

Automatic Ladling for Aluminium

Believed to be the first installation of its kind in this country, a radiant-dome aluminium holding furnace fitted with a Lindberg "Autoladle," has recently been put into use at the Birmingham works of Aeroplane & Motor Aluminium Castings, Limited. It is claimed that it makes fully-automatic die-casting possible by dispensing accurate amounts of metal at regular intervals to a heated launder, for delivery to a gravity- or pressure-die-casting machine. The holding furnace is of American design and was manufactured in this country by Foundry & Metallurgical Equipment Company Limited (Netherby, Queens Road, Weybridge, Surrey).

The furnace (Fig. 1, right) which has a capacity of 18 cwt., has separate charging and ladling wells, a division between them preventing inclusions from the melting furnace getting into the ladling chamber. The metal is maintained at the required temperature by radiation from non-metallic Globar elements, mounted horizontally above the surface of the metal and easily withdrawn from the side of the furnace. The temperature of the aluminium is controlled automatically.

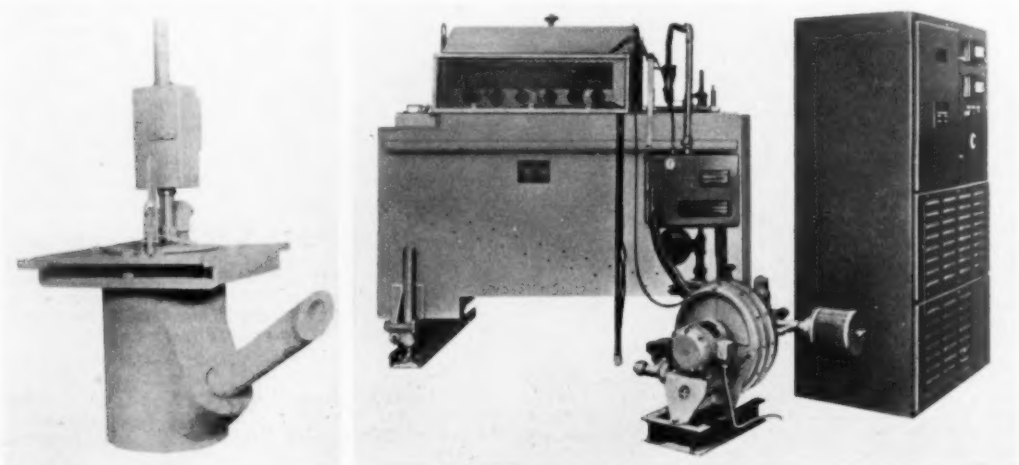
The Autoladle (Fig. 1, left) is submerged in the ladling well and withdraws aluminium from below the surface. It is operated by air-pressure; the quantity of metal it dispenses depends upon the amount of pressure and its duration, and remains constant, it is reported, regardless of the level of the metal. It can discharge any quantity of aluminium up to 15 lb. at one-minute intervals. Larger models can handle weights up to 60 lb. The holding furnace is made with capacities down to 3 cwt.

Columbium Metal

The St. Lawrence Columbium and Metals Corporation, 2500, Marie-Guyard, P.O. Box 233, Montreal 29, Canada, announce that they will have supplies of columbium available from August, 1961, when the erection of the commercial mill to exploit the firm's new ore-field is in operation. South American Minerals and Merchandise Corporation, 425, Park Avenue, New York, has been appointed exclusive sales agents for the columbium for a period of two years.

Pattern Letters: The availability of a range of Polythene sharp-faced pattern letters for the smaller sizes (below ½ in.) is announced by A.E.I. Plastics (Aldridge), Limited, 33, Grosvenor Place, London, S.W.1. The characters are normally supplied in light-grey colour to contrast with the conventional colours used for pattern identification. The letters can be fixed by pinning or glueing and resilience under ramming blows and non-sticking properties are among features claimed.

FIG. 1—*(right) "Fame" aluminium holding furnace fitted with an Autoladle and installed in the Birmingham works of Aeroplane & Motor Aluminium Castings, Limited; (left) Autoladle for automatically dispensing metal from a holding furnace to a die-casting machine.*



Recruitment and Training in UK Steel Foundries

Report from the Recruitment and Training Committee of the British Steel Founders Association.*

In July, 1960, all members of the British Steel Founders' Association were asked to complete a questionnaire which had been compiled by the Recruitment and Training Committee. The Committee hoped that the replies to this questionnaire would enable it to form a picture of the requirements of the industry in such matters and so act as a guide when the Committee formulated its future programme of activities.

Replies to this questionnaire were received from 34 members employing approximately 80 per cent. of the hourly-rated workers employed by all BSFA member-firms and these have now been considered by the Committee. Much of the information revealed is too particularized to be of general interest to managements, but the Committee feel that attention should be drawn to the following matters.

Qualifications

The proportions of employees in various occupations holding qualifications is shown in Table 1.

TABLE 1.—*Percentages of UK Steelfoundry Personnel holding Qualifications.*

Occupation.	C & G		N.F.C.	N.C.	Degree.	Any qualification.
	Inter.	Final.				
Patternmakers ..	8	12				20
Moulders and coremakers	2	2				4
Ratefixers	14		—	3	3	20
Works study ..	16		9	12	—	37
Job methods ..	37		6	18	1	62
Sand chemists ..	3		—	18	4	25
Furnace chemists ..	3		—	12	3	18
Metallurgy	10		—	32	33	78
Casting inspection ..	3		—	5	1	9
Supervisory ..	10		1	6	3	20
Total.. ..	10.9		1.5	10.7	4.5	27.6

The Committee is aware that, due to differing organization and definition of duties in member-firms, Table 1 must be treated with some reserve but nevertheless it is suggested that with the increasing emphasis on technical skills, the position is unsatisfactory.

The Committee is particularly concerned at the small proportion of moulders with City & Guilds certificates. It is realised that in many cases a moulder who attains this standard is probably promoted to some other position but nevertheless as approximately 30 per cent of the moulders under 21 are attending City & Guilds courses, the proportion failing to obtain a certificate is very high. Various interested bodies are exploring the possibility of establishing alternative craft qualifications and these developments are being watched closely by the Committee.

One of the criticisms levelled against steel castings is that defects are discovered after delivery, possibly after machining has begun. This may indicate a need for better inspection at steel founders' works and the Committee draws attention to the small proportion of inspection staff possessing some qualification. It also suggests that the small proportion of supervisory staff concerned with earlier stages of production and possessing a suitable qualification may have a bearing on this problem. Similarly, as the need to expand markets increases, it is desirable that steel founders should have staff capable of discussing engineering problems with customers. The Committee considers that an increased proportion of suitably qualified supervisory staff will be required in the future.

Opportunities for Technical Education

Five member-firms have reported a lack of City & Guilds courses in their areas and in its future activities the Committee will be considering ways and means of assisting any companies whose recruitment and training programmes are hampered by a lack of such facilities. Almost all member-firms operate day-release systems and the Committee feels that, in general, there are sufficient opportunities for employees to attain City & Guilds and other qualifications. The Committee feels that insufficient use is made of the facilities offered by the National Foundry College and National Foundry Craft Training Centre which, during their existence, have been attended by only 28 and 40 students respectively from 10 member-firms.

At the present time the industry appears to have few fears about its ability to recruit sufficient apprentices and technicians. The Committee is not so confident that the best type of apprentice and technician can be recruited in sufficient numbers to maintain the standard of the industry's products. This matter will therefore be kept under review. The Committee is particularly concerned with the possible future shortage of technicians and supervisory staff and will be studying this further in the near future.

As to future training requirements, the Committee agrees with the views expressed by many members that there is a need for greater emphasis on practical foundry training both for apprentices and as a basic training for technicians. It hopes to pursue this policy in the future.

Committee Members

The constitution of the BSFA Recruitment and Training Committee is as follows: Chairman, Mr. F. Shepherd; the representative for the Midland and Welsh Region is Mr. D. B. Beynon (F. H. Lloyd & Company, Limited); for Lancs. and Yorks. Region, Mr. E. Dalton, Osborn Foundry & Engineering Company, Limited) and Mr. J. G. Pritchett (English Steel Castings Corporation, Limited); N.E. Coast Region Mr. J. Byers (Davy & United Roll Foundry, Limited), and Scottish Region, Mr. J. U. Buchanan (Clyde Alloy Steel Company, Limited).

* This Report has been slightly abridged.

Useful Gadget:

Water Dispenser for Core Mill

By G. Dunn

An interesting study in motion economy at the Author's foundry was illustrated when some time ago it was decided to improve the feeding of materials to a core mill. In this particular case the main concern was with the addition of a measured amount of water. The existing method consisted of walking to a tap adjacent to the mill, picking up a measure container, running off water into the container, walking to the mill, pouring the water to the mill, and returning the measure to the side of the tap. This is illustrated in the Process Chart Fig. 1.

Fig. 1

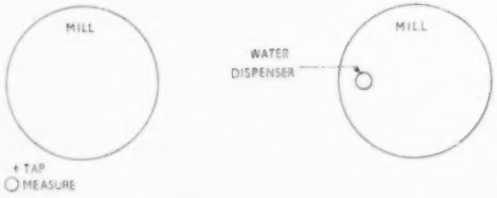


Fig. 2

The improved method consisted of mounting on the mill a graduated glass measure attached to a three-way valve, connected to the water supply. This again is illustrated by Process Chart Fig. 2. Measuring of water to the mill, is now simply a matter of manipulating the three-way valve. Firstly with the valve lever in the first position, water is fed to the glass container to the required amount, moving the lever to the second position cuts off the water supply, and holds the water in the container, the third move, feeds the water directly to the mill.

The water measure and valve set up is shown in Fig. 3. The container is a glass aspirator purchased from a supplier of chemical and laboratory equipment. The valve is a standard piece of equipment modified by lengthening the handle and adding a large plastic knob. A later refinement, was a stainless steel strip attached to the side of the container, graduated for the required amounts of water.

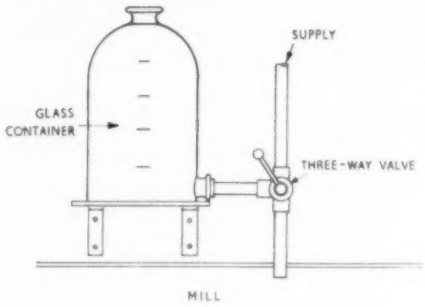


Fig. 3

* The Author is attached to the Tame Bridge Foundry of W. & T. Avery, Limited. He wishes it to be pointed out that he is not the originator of the apparatus and method described, but contributed to its design.

Course on Statistical Quality Control

The College of Advanced Technology, Birmingham, is again offering a full-time course of three weeks' duration on "Statistical Quality Control and Acceptance Sampling" commencing on September 11. The course, primarily intended as an introduction to the subject, provides the basic training necessary for quality control engineers. The first fortnight will be spent in covering the general principles and procedures of quality control. The final week will be devoted to lectures by specialists from industry, and to visiting the works of firms employing quality control, where members of the course will be able to see the practical application of quality-control methods, and discuss the techniques and associated problems.

The course will be directed by Mr. J. D. Morrison, principal lecturer in metrology and quality control in the production engineering department, and will be run in co-operation with the mathematics department. Further details and application forms can be obtained from the Bursar, College of Advanced Technology, Gosta Green, Birmingham 4.

Mr. P. J. C. Bovill, managing director, Newton Chambers & Company, Limited, Chapeltown, Sheffield, and Mr. K. E. Walker, assistant managing director, were introduced to the Duke of Edinburgh, at the Design Centre in London on May 17 when the firm received a Design Centre Certificate for their Centramatic "35" domestic oil-fired boiler. It was designed by Mr. Brian Asquith, who worked with Mr. Michael A. Hetherington, design and development engineer for 12 months before the boiler was produced. Mr. S. Fowler, managing director, George Wolstenholme & Sons, Limited, cutlers, Wellington Street, Sheffield, was also introduced to the Duke when the firm received a certificate for their Monte Carlo carving set in stainless steel and carbon steel with a satin finish. It was designed by Mr. G. G. Bellamy.

National Foundry College "Open Day"

Survey of Activities during Commonwealth Technical Training Week.

On June 2, the National Foundry College, Wolverhampton, held an "Open Day," organized in conjunction with Commonwealth Technical Training Week. Some 250 people attended, representing the foundry trade of the country. During the proceedings, diplomas were presented to students who had been successful in the 1959/60 session by Sir Cyril Musgrave, chairman of the Iron and Steel Board. In the chair was Sir Frederick Scopes, chairman of the Board of Governors of the College. Among the guests attending were the Mayor of Wolverhampton and Mr. John Osborn, M.P., B.A., himself a College diploma holder, Mr. D. A. Richards, president of the Institute of British Foundrymen, and Mr. R. F. Horton, IBF junior vice-president.

After the ceremony, the visitors viewed the facilities for training and education in the College. In the lecture theatre, on the top floor, they inspected an exhibition of management training, work-study and foundry layout. They found particularly interesting a large map of the UK showing the distribution of students who have gained Diplomas since 1948. The wide distribution of students throughout the British Commonwealth and the rest of the world was also clearly shown. Subsequently, all the visitors gathered for tea in the College refectory at the termination of a most enjoyable "foundry" and social occasion.

Diploma Presentations

Twenty-two students of the College were presented with Diplomas for their success in the session 1959/60 by Sir Cyril Musgrave. He said that he himself had had no technical education, but his experience as Permanent Secretary to the Ministry of Supply had brought him in close touch with scientific matters because the Ministry employed the largest body of scientists and technicians in the country.

The requirements of industry, he continued, might be put into three groups—capital, material and labour. It was true that some of the materials of the iron and steel industry came from abroad but no shortages of materials or of capital were likely to be a critical factor in the advancement of the national economy; shortage of labour, however, especially of people skilled at managerial and technical levels, might be such a factor.

Sir Cyril said that in the last two years he must have been into more steelworks than any other man, and plants of all kinds were getting more complex—automation was almost a standard part of the machinery. He prayed that education in the United Kingdom would be on a scale to ensure that all of these plants could be run and maintained and used to the best advantage. The foundry industry was a very important one. The output in terms of tonnage was growing relatively slightly but that was not any indication that its importance or the importance of those who served it was becoming less. The foundry was less and less a place where simple and massive structures were made. Designers were looking to the industry for more complex castings and intricate small machine parts made by newer techniques. There would always be some components which would have to be made by casting but competition of welding was growing and the foundries must keep up to date and search for new and improved techniques.

The importance of trained students—such as those whom he was addressing—to the industry and to the nation increased with each year that passed, but Sir Cyril said that however hard they pursued their technical studies they should not overlook that there were some things in life which were even beyond truth and wisdom—"I beg you not to be too exclusively technical in your studies," he added. He had been told that in Germany one could get a doctorate in foundrywork. There were now Dip. Tech. courses in physics and chemistry, and he thought that a similar course for the foundry industry might be worth more than the usual graduate courses, although, as he said, there were dangers in excessive specialization. Finally, Sir Cyril congratulated the College on the excellent work it was doing and the young holders of the Diplomas on their success.

The students who were successful in obtaining Diplomas during this session were: Mr. W. J. Blackmore, Mr. A. Brown, Mr. J. Clarke, Mr. A. W. Collier, Mr. K. Collinson, Mr. E. Doneathy, Mr. N. A. East, Mr. G. Fiddian, Mr. D. Gregory, Mr. R. A. Hailstone, Mr. B Haynes, Mr. D. A. Haywood, Mr. W. Kallagher, Mr. G. W. Kebell, Mr. J. L. Middleton, Mr. K. R. Reynolds, Mr. R. Rutherford, Mr. D. M. P. Scott, Mr. C. Smith, Mr. M. F. Walter, Mr. D. W. J. Williams, and Mr. G. Williams.

Other Speeches

The chairman of the Board of Governors, Sir Frederick Scopes, who presided, read a message of good wishes from the Minister of Education. He said that in the eyes of future historians, the two most significant events in progress might be the Commonwealth Technical Training Week and the Moscow Trade Fair. Speaking of the former, Sir Frederick said that the Duke of Edinburgh had pointed out that of the 550,000 boys and girls leaving school about 420,000 would enter unskilled occupations. This was wrong, and he hoped that all in his audience would act as missionaries in the cause of technical training and education.

NFC "Open Day"

One of the duties of the Iron and Steel Board, Sir Frederick concluded, was to keep under review "the training and education of persons employed or to be employed in the iron and steel industry." The College dealt with all the cast metals, but in terms of output, iron castings (at four million tons per year) and steel castings (130,000 tons) made up the larger part of the industry's production.

Mr. J. H. Osborn, M.P., for Hallam, Sheffield, an ex-student of the College—he gained his Diploma in 1949 and is a member of the Foundry Technical Group—spoke of the value of the College to all those who passed through it. Sir Cyril Musgrave had mentioned the importance of technical qualifications, no doubt the Institute of British Foundrymen was keeping such matters under review, just as other technical bodies in metallurgy and mechanical engineering had done: but a qualification was nothing in itself, it was the knowledge one acquired in getting it and the use one made of that knowledge that counted. Commonwealth Technical Training Week had given all students a magnificent opportunity to see the many different careers open to them. Mr. Osborn pointed out that a career in foundrywork could bring the individual in touch with all the vast range of interests of the users of castings from the design and engineering angles.

Standards Engineers' Conference

Some 230 engineers and others concerned with the application of standards attended last month's seventh Standards Engineers' Conference organized by the British Standards Institution and the Institution of Production Engineers. The first day's proceedings of the two-day conference were held at Connaught Rooms, London, with Sir Stanley Harley (Coventry Gauge & Tool Company, Limited) in the chair, and on the second day a series of six separate sessions was held at British Standards House.

Viscount Hailsham, Lord President of the Council and Minister for Science, who opened the conference told delegates that "An efficient economy requires standards—partly in order to achieve savings by the elimination of unnecessary variety and partly in order to reduce waste and danger by preventing the production of sub-standard goods." The standards, he continued, must result from discussion between representatives of the producer and user; they must be a blend of scientific knowledge and industrial and commercial experience; and they must be expressed clearly and intelligibly. Old standards which have become obsolete are, or can be, as dangerous to industry as no standard at all.

Amongst subjects discussed on the first day were "Trade Unions and Industrial Standards"; "Standards in the Electronics Industry"; "A Company Standards Programme," and "Standards and Markets Research."

Mr. F. E. Butcher, of Joseph Lucas, Limited, in presenting the "Company Standards" paper stressed that it was important that a cheaper product did not result in higher operating costs. He also thought that technical economics should play a larger part in standards programmes and that economists could help in this work. "We are all inclined to consider standardization only so far as we can see it and sometimes our vision is very limited," he said.

Market Research

The suggestion that the BSI should set up a market research advisory committee was made by Mr. I. Maclean (Hawker Siddeley Industries, Limited) in his paper on standards and market research. In his opinion the extent to which the customer was willing to forego his exact requirements in favour of a lower price was obviously the sort of information that would be of great value in determining whether or not to introduce a range of standard products and also in determining the sizes within that range. It was his view that some performance standards were set at an unnecessarily high level.

Mr. Binney, reviewing the steps taken since the last conference in establishing the BSI's Register of Standards Asssociates said the Register had got off to a good start and there would be the opportunity later for association with similar groups overseas. The chairman of the Register's programme committee, Mr. E. H. Williamson (Distillers Company, Limited), reported that membership was approaching 300. Sir Stanley Harley in summing up the first day's proceedings suggested that industry must ask whether its standards were too conservative compared with international practice to which the UK must increasingly look if its export trade was to prosper. From this and other points of view, market research should be brought into BSI's deliberation on standards.

On the second day of the conference, delegates split into groups at British Standards House to discuss such matters as:—The application of a standards system in a small company; steel-variety reduction by manufacturers and users; standardization in fields where techniques are advancing rapidly; standardization in a one-off and batch-production company; the unified screw thread in British industry; and the introduction of a major change in standards practice.

BIR Annual Congress

At the annual congress of the *Bureau International de la Recuperation*, held in Rome last month under the chairmanship of Mr. Robert Angles (France), president of the BIR management committee, Mr. Austin (Great Britain) speaking with reference to the European Free Trade Area mentioned that representations were being made to the British Government to obtain a softening of the present regime for exports. Concerning the publication of an "International Classification of Non-ferrous Scrap Metals," it was reported that this work is progressing satisfactorily and is expected to be completed within the next few months.

Machine-tool Research Grant Raised

Mr. J. C. Snow, joint managing director of Snow & Company Limited, Sheffield, who is president of the Machine Tool Trades Association, and also chairman of the Machine Tool Industry Research Association, reports in the first *News Letter* of the latter Association that the Department of Scientific and Industrial Research is to pay almost half of the machine-tool research carried out instead of a normal contribution of about 30 per cent. He says the terms of the grant are "particularly generous," and asks that the industry responds wholeheartedly. Members of the research body must raise at least £40,000 a year in order to qualify for the grant.

Notes from the Branches

Northampton Section

At the annual general meeting of the Northampton and district section, held at the Technical College, Church Street, Wellingborough, on April 27, Mr. A. Tipper was elected president for the ensuing year, Mr. J. Hope senior vice-president and Mr. J. W. Deaton, junior vice-president. Members of Council are:—Mr. R. J. Wicksteed, Mr. C. H. Hanson, Mr. J. A. Gray, Mr. G. W. B. Hanna, Mr. W. J. Wood and Mr. L. E. Robinson. Mr. W. D. Ford was re-elected secretary.

In the secretary's report mention was made of the annual dinner, the six meetings and the two works visits held during the year and it was said that the average attendance of 38 was an increase on the past record. Membership was rising only very slowly at the rate of two or three a year and members of the section were still producing short papers, two of which form the subject matter of one meeting each year. Mr. R. J. Wicksteed then spoke of the value of the section and its use to industry and he thanked the retiring president, Mr. R. Jelley, and the other officers of the section for their able services in the past year.

Work-study

Following this business, Mr. C. M. G. Wallwork presented a paper on "Work-study" in which he described in detail how his own company, Henry Wallwork & Company, Limited, had embarked on a comprehensive system of work-study some years ago to improve foundry production and increase remuneration to employees. He pointed out that work-study was really a combination of method-study and time-study and after considerable experience and standardizing methods, synthetic times could be obtained which enabled a job to be costed more accurately and to be priced with reference only to method, thus eliminating the difficulty of agreeing piecework prices.

Discussion

Mr. Ford opening the discussion, which followed, asked whether in Mr. Wallwork's foundry minute values were used or money values. Also how were ancillary operators such as oven attendants paid by an incentive scheme and how many work-study engineers would be required for each 100 men employed.

Mr. Wallwork replied that the standard minute method was used throughout his foundry and he considered it preferable to piecework prices. Regarding ancillary labour he said that his practice was by work-study to assess the number of operators required so providing each with a full day's work at piecework standard and then to pay them the same hours earned as the direct production workers whom they service. Time-study engineers could be allotted one to every 100 men although when synthetic times were established this ratio could be increased. Conversely, when introducing work-study to a foundry for the first time the ratio would have to be reduced because of the size of the task to be undertaken.

In the changeover to the new method, Mr. Wallwork said one section was dealt with at a time and there had been full discussions to iron out every detail. No serious difficulty had been encountered in going into production. Answering another question as to payment-by-results system when scrap castings were produced, he said he considered all moulds should be paid for and he also considered it the responsibility of the supervisors to see that all moulds and castings were good ones. He agreed that the men's earnings varied very much from standard, but said this was en-

Coventry Section's Visit to Staveley Iron & Chemical Company, Limited

Members of the Coventry and district section found much to interest them during a day's visit to the Chesterfield works of the Staveley Iron & Chemical Company, Limited (May 17). The morning was spent at the blast-furnace plant of Devonshire Works, where the party was welcomed by the general manager, Mr. A. H. Winspear. After luncheon at the company's Ringwood Club, at which the foundries' manager, Mr. R. Palmer, presided, the afternoon was spent at the pipe-spinning plants and the foundries. The photograph shows the party at Devonshire Works, with the chairman of the Coventry section, Mr. R. W. Cooper (extreme right), and the secretary, Mr. M. R. J. Evans (fourth from left). Making the explanations is the Staveley guide, Mr. O. Norman (third from left).

Notes from the Branches

tirely due to the ability of the worker and thought this would always obtain and might even be desirable. As to who determined the method of doing a new job, this was settled by the moulding superintendent, together with the foreman and the chargehand on the plant concerned. If, however, completely new methods were to be adopted then the work-study engineer would also come into the picture; but most jobs were worked on established principles and could normally be arranged by the shop supervisors. He assured another member that smaller founders could derive great benefit from work-study and whilst it was perhaps expensive to maintain a full-time work-study engineer for a very small firm it was often possible to obtain part-time services of such a man through an agency. The employment of a work-study engineer did not necessarily mean that a good deal of money would have to be spent on new capital equipment. In many cases the use of method-study could be a means whereby money was actually made so that any capital investment programme under consideration could in fact be floated.

Time study and method study, continued Mr. Wallwork, were both very important, time-study being really the measuring standard or the ruler for method-study. If there had to be a choice between the two, method-study was the more important.

The president then terminated the discussion to allow Mr. Wallwork to show a number of coloured slides which he had brought along to explain details of the erection and operation of his new hot-blast cupola which is unique in this country.

Mr. Hanson then proposed a vote of thanks and congratulated the speaker on the excellence of his lecture. Mr. Stevens in seconding the proposal expressed the pleasure of the section in seeing Mr. Wallwork in Wellingborough for the second time.

London

The London branch held its annual general meeting at the Constitutional Club, Northumberland Avenue, London, W.C.2, on April 19. For the 1961/62 session, Mr. A. R. Parkes was elected president, and Mr. J. R. Booth and Mr. L. A. S. Harbourne as senior and junior vice-presidents respectively. Mr. T. Wills was elected honorary secretary. As members of the branch Council, Mr. A. W. Bartlett, Mr. W. R. Buxton, Mr. D. Morris, Mr. W. J. Pym, and Mr. H. W. Sims were re-elected from those retiring from office this year and Mr. F. Barrington-Hooper was elected in place of Mr. Harbourne. Mr. G. R. Webster and Mr. F. Arnold Wilson were elected as hon. auditors, Mr. P. Ellis as hon. lanternist, and the stewards (Mr. G. C. Pierce, Mr. R. Pipes, Mr. W. J. Pym and Mr. L. A. S. Harbourne) were re-elected *en bloc* and Mr. A. W. Bartlett was also elected.

Apprentices' Evening

Following the annual general meeting, there was an ordinary general meeting which took the form of a film show followed by a "Brains Trust" to which apprentices from local foundry and engineering firms were invited. Two films were shown—"Fifteen Years of Progress" and "Your Eyes are Precious." The first-mentioned showed progress made by Alumasc, Limited, of Burton Latimer, in their low-pressure die-casting foundry and an excellent commentary was provided by Mr. S. J. Y. Rumble, production engineer of the company. The second film was borrowed from the British Steel Founders' Association and, as the title suggests, stressed the necessity for adequate eye protection for foundry personnel.

After the films, a lively discussion took place, questions being put forward by apprentices to the panel which comprised Mr. W. W. Braidwood, Mr. D. Morris, Mr. G. C. Pierce, Mr. B. Levy, Mr. F. C. Hayes and the chairman, Mr. A. Talbot. The outgoing president, Mr. D. A. C. Hutchison, presented prizes of 50 cigarettes to all apprentices who "beat the panel." Questions asked included: How does the efficiency, organization and technology of British foundries compare with those in other countries, especially USA and Germany? In the diaphragm moulding process, did the panel consider there was sufficient strength in the small thickness sand to retain medium/heavy metal sections? The meeting closed with Mr. Hutchison congratulating the two apprentices from the London branch, Mr. White and Mr. Rosendale, on their selection to represent the UK at this year's European Foundry Apprentice Competition.

Southampton Section

The meeting at the Technical College, St. Mary Street, of Southampton-area members on April 24, commenced with the annual general meeting of the local section at which all officers of the branch were elected for a further year of office.

The ordinary meeting which followed, which was the occasion of the London branch president's official visit, had to be reorganized owing to the sudden indisposition of Mr. W. B. Parkes of the British Cast Iron Research Association, who was to have lectured on foundry sand. Instead, Dr. O. P. Einerl, the secretary, had obtained at very short notice three most interesting films on mechanical handling and the 40-odd members who attended had a most interesting 1½ hours' show. Members from London who attended this liaison visit included, in addition to Mr. D. A. C. Hutchison, Mr. Thos. Wills, Mr. J. Butler, Mr. R. Pipes and Mr. F. Robinson. In conclusion Dr. Einerl thanked everyone for their support during the past session and was thanked in turn for his tireless efforts.

Birmingham

The IBF Birmingham branch held their annual general meeting on April 26 when the following officers were elected—president, Mr. D. P. Smith, senior vice-president, Mr. J. E. Spear, junior vice-president, Mr. A. J. Crooke, and honorary secretary, Mr. S. N. Wrightson.

After the business of the meeting was completed a "Brains Trust" was held with a panel of foundrymen from the East Midlands branch of the Institute, the panel consisting of Mr. J. Hill, Mr. J. D. Hill, Mr. D. W. Berridge, and Mr. C. W. Hicks. Some difficult questions were put by members but all were exceedingly well discussed and answered by the panel, frequently with the right admixture of humour to provide an entertaining as well as instructive evening.

Natal Section

A very interesting talk on the "Atlantic Missile Range" was given by Major D. L. Spivey, Liaison Officer of the United States Airforce Missile Test Centre, to the April meeting of the Natal section of the Institute held in Johannesburg.

Walsall-area Foundry Trade Joint Recruitment & Training Committee

One of the few and possibly the most active regional foundry recruitment and training committees is that organized under the above title for the Walsall and district foundry industry. On Friday, June 2, the Committee held its third annual general meeting and dinner in the Kenmare Café, Bridge Street, Walsall, with Mr. H. G. Hall, F.I.M. (director, Castings, Limited), presiding. The Committee comprises, in addition, Mr. B. Edwards (hon. secretary), Mr. H. L. Bird, Youth Employment Officer, Ministry of Labour, Walsall (its adviser), four foundry employer representatives and five representing employees. Co-opted members include Mr. H. Cheetham (principal, Walsall and Staffs Technical College), Mr. H. A. MacColl (principal, County Technical College, Wednesbury), and Mr. A. M. K. Turney (regional supervisor, Engineering Industries Group Apprentices' Association). Nearly all of the above were present at the dinner, accompanied also by other representatives from educational bodies and industry, together with a large number of students from the Colleges of the area to a total of about 80. The after-dinner "menu" consisted of, after the Loyal Toast, the annual report of the Committee (which had been previously cyclostyled to members), an address by Mr. Wesley Perrins, M.B.E., J.P., district secretary, National Union of General and Municipal Workers, presentation of prizes and of the "Sir Frederick Scopes Trophy," addresses by Mr. A. R. Parkes (editor, FOUNDRY TRADE JOURNAL), by Mr. F. C. Hayes (education and training officer, Council of Ironfoundry Associations), and by Mr. B. Edwards (works manager, Castings, Limited).

Annual Report

In his annual report, which had been circulated, the chairman, Mr. Hall, said that throughout all industry to-day, there was a growing realization that the youth of the country must be trained to the stage when it could accept the responsibility which would undoubtedly fall upon its shoulders during the next decade. This, he continued, was not a case of "spoon-feeding," but one of self-preservation because these young men would be responsible for maintaining the volume and standards of British industry in the not-too-distant future. All credit was due, he said, to those in industry who had "come up the hard way" and the foundry industry owed a great deal to them and could feel proud of their achievements. This position, however, could not be maintained—the processes of change were now so rapid and the introduction of new techniques so revolutionary in many ways that it would be impossible for anyone whose horizons had been limited by existing methods to comprehend all the new ideas that technical science brought forward. Keeping up with the times was essential for survival.

Turning next to the activities of the Training Committee itself, Mr. Hall said its problem was to improve the intake into the industry as a whole and not to a particular firm and this could only be achieved by "selling" the foundry trade to school-leavers. To do this, it was necessary to compete on equal terms with all the other attractive industries and to show that the foundry provided equal opportunities. This, he said, emphasized the need for training along approved lines as carried out—with technical-college facilities—in comparable industries. Without these opportunities, he continued, recruitment would decline in numbers and standard, and he hoped that the remainder of this annual report would show members of the Committee that it was taking the right steps.

Next, Mr. Hall made reference to the Sir Frederick Scopes trophy which had been donated to be presented to the most deserving apprentice in his 4th or 5th year of apprenticeship. As no apprentice was considered good enough this year, it was to be presented to the Committee during the evening. He hoped that there would be stern competition in future years for it and he thanked Sir Frederick for his foresight and generosity in this matter.

Leaflet for School-leavers

In furtherance of the Committee's intention to recruit a reasonable proportion of the boys leaving school each year for the foundry industry, Mr. Hall said that a leaflet had been prepared for distribution in school and at careers exhibitions, and it was made available for the first time at the Careers Exhibition during Commonwealth Technical Training Week. He was pleased that a worthwhile stand manned by Committee members had been staged at Walsall Technical College during the Commonwealth Week, and thanked those who had worked so hard to make this a success.

Turning to the progress made over the past year, the chairman said the number of apprentices gained during the first year had remained constant and about 40 were now attending day-release classes at technical colleges. This figure, he said, while far better than two years ago, was still not as high as it should be for such an extensive industry as the foundry industry. However, as far as recruitment of boys from school was concerned, the trend appeared to be in the right direction—during 1960, there were 43 young men as compared with 30 in 1959.

Concluding his report, Mr. Hall said the objective in holding this annual event was to bring together as many as possible of the representatives of the industry, and he expressed the hope that the evening would be both successful and interesting.

Guest Speakers

Following the presentation of the annual report, the company was addressed by Mr. Wesley Perrins. During the course of his remarks, he referred in pungent terms to the increasing tempo of the struggle for world's markets and the need for British industry, particularly of such a basic industry as the foundry industry, to equip itself by providing the irreplaceable element of skill, both manual and managerial. If necessary, he said, there would have to be some re-thinking by Unions in relation to these needs. After his remarks, Mr. Perrins then presented prizes to Mr. B. A. Johnson (Castings, Limited), a first-year student, to Mr. T. C. Flavell (Kirkpatrick, Limited), second-year, and to Mr. T. J. Egan (J. A. Crabtree, Limited), third-year.

Next in the proceedings came the presentation to the chairman of the "Sir Frederick Scopes Trophy" by Mr. M. M. Hallett, on behalf of Sir Frederick. The trophy, a silver cup of contemporary design and suitably inscribed, will be held by the Committee for next year's competition.

After the presentation, Mr. Parkes was asked to address the gathering. During the course of his remarks, he spoke of the need for the Committee, firms and individuals in the industry to publicize their activities to a much greater degree. Practically all publicity was good publicity, he said, in that it could bring the public into closer understanding of what happened in the industry. He also pleaded that the work of the Committee should not be left to a few "willing horses."

In Mr. Hayes' address, entitled "CFA Viewpoint," he detailed what the Council of Ironfoundry Associa-

Foundry Recruitment & Training

tions had available in the way of training aids, such as films, booklets, wall-charts, etc. He then referred to the recent European Foundry Apprentice Competition as an example of the increasing need for such activities as the Committee was embarking upon. The final address of the evening was given by Mr. B. Edwards under the heading "The Way up the Ladder." This was a real "success story" and told of the speaker's rise to being a foundry works manager at the age of 29.

Personal

Mr. J. A. R. KAY is resigning with effect from June 30 as director of the Hawker Siddeley group and sales director of Hawker Siddeley Aviation, Limited, to devote more time to his family interests in the North of England. Mr. Kay has been associated with the various companies in the Hawker Siddeley group since 1932.

Mr. C. D. WATTLEWORTH has been appointed assistant managing director (technical) and Mr. D. A. HUME, assistant managing director (commercial) of the Wellman Smith Owen Organization. Mr. A. T. EASTERBROOK has been appointed general manager of the furnace-building and contract department in succession to Mr. G. TALBOT who has resigned.

Mr. M. C. LLOYD, M.B.E., assistant managing director of F. H. Lloyd & Company, Limited, Wednesbury, and managing director, Lloyds (Burton), Limited, has accepted the presidency of the National Trades Technical Societies, South Staffordshire section, for the year 1961-2. The retiring president is Mr. G. R. LUNT, managing director, Bradley & Foster, Limited.

Mr. J. F. WIDMAN, director and general manager, chemical division, of Union Carbide, Limited, will shortly be taking up a new assignment with Union Carbide International Company, Limited, and consequently will be retiring from the board of Union Carbide. Mr. K. D. RUTTER has been appointed marketing manager, chemical division, of Union Carbide.

THE FILDES SILVER MEDAL AND PRIZE of £20, offered by the Institution of Works Managers, has been won by Mr. ROBERT LESLIE JOHNSTON, aged 29, of the Tees-Side branch of the Institution. Restricted to students under the age of 30, the Ellis Memorial Award, a silver medal and a prize of £10, has been awarded for the year 1960 to Mr. H. F. WARREN of the London branch.

Mr. T. H. GAILLIE has been appointed to the newly-created post of overseas director, and Mr. J. R. H. CRANE, director in charge of copper products, of the Metals Division of Imperial Chemical Industries, Limited. Mr. Gaillie was formerly metal sales manager of the Midland region, and Mr. Crane has been general manager of Lightning Fasteners, Limited, Witton, since 1959.

In consequence of the recent retirement of Mr. E. W. I. ARKLE, chief traffic officer of the British Railways Central Staff, and the impending retirement of Mr. T. H. HOLLINGSWORTH, the British Transport Commission's traffic adviser, the BTC has decided to appoint Mr. S. E. RAYMOND, at present assistant general manager (traffic) in the Scottish Region of British Railways, as traffic adviser at the headquarters of the Commission.

Forty-seven-year-old Dr. A. M. BAXTER, assistant chief research engineer with a large Glasgow company, has been appointed assistant director of education (technical) for Lanarkshire. He was educated at Pollokshields Secondary School and the Royal College of Science and Technology. During the war he served with the Admiralty and in 1945 joined the British Shipbuilding Research Association in London. Four years later he returned to Glasgow to take up the post of senior lecturer in engineering at the Royal College.

A Glasgow apprentice draughtsman Mr. JOHN C. MCNEILLIE, aged 21, who is in his final year with the Glasgow engineering firm of James Howden & Company, Limited, has won the visit to the Alfa-Romeo car factory in Milan and a week's holiday on the Italian Riviera offered as the first prize in a national essay contest for apprentices. The contest was promoted as part of Commonwealth Technical Training Week and the prize awarded by Production-Engineering Limited, industrial consultants, whose clients include Alfa-Romeo.

Mr. F. H. EWENS, chairman and joint managing director of W. Canning & Company, Limited, has relinquished his joint managing directorship but will continue to be chairman. Mr. W. H. GRIFFIN, joint managing director, has been appointed deputy chairman and will become sole managing director. Mr. L. G. MUMMERY, director and secretary, has relinquished the office of secretary and becomes assistant managing director. Mr. D. PADDON-SMITH has been appointed to the board in place of Mr. S. S. DAWSON who has retired. Mr. J. M. STEVENS has been appointed secretary of the company.

Mr. J. BEECH, B.MET., a senior investigator of the metallurgy section of the British Steel Castings Research Association, Sheffield, has resigned as from the end of June, having been awarded a United Steel Companies Fellowship at Sheffield University, and Mr. G. M. GILL, A.MET., L.I.M., hitherto a scientific officer on the staff of the British Iron & Steel Research Association, has been appointed to replace Mr. Beech. Mr. B. SANSBY, a senior technical assistant, has recently joined the staff of the steelmaking section in order to replace Mr. M. SEWELL, a senior investigator, who resigned on taking up a position on the technical staff of Hilger & Watts, Limited (Sheffield area).

PROFESSOR R. H. EVANS, Professor of Civil Engineering at the University of Leeds, and Administrative Head of the Department of Engineering, has been appointed Pro-Vice Chancellor of the University for the sessions 1961-63. He was chairman of the Yorkshire branch of the Institution of Structural Engineers in 1940-41 and was installed president of the branch in 1958. Dr. J. W. CRAGGS, Reader in Mathematics at King's College, Newcastle, has been appointed Professor of Mathematics at Leeds University, and Dr. H. A. TURNER, Lecturer in Industrial Relations at Manchester University since 1950, has been appointed to the Montague Burton Chair of Industrial Relations at Leeds.

Of the two sons, Arthur and Jack, of Mr. E. B. Phillips, founder of Harper Phillips & Company, Limited, engineers and ironfounders, Grimsby, Mr. ARTHUR PHILLIPS was managing director from the time of his father's death in 1926 up to recent times when his elder son, Graham, took over these duties. As recently announced in the JOURNAL, Mr. JACK PHILLIPS, who is managing director of Phillips Trawl Products, Limited, has now rejoined the board, as it is felt that he will be of assistance during the further stages of modernization which are taking place at the firm during the next year or two. Mr. Arthur Phillips has assumed the duties of joint chairman with his mother, Mrs. A. C. Phillips.

Interchange of Workers in Western Europe

The Ministry of Labour's scheme for the interchange of workers between countries of the Western European Union—Belgium, France, the Federal Republic of Germany, Italy, Luxembourg, the Netherlands and the United Kingdom—has been extended to the following countries: Austria, Denmark, Greece, Norway, Spain, Sweden and Switzerland. The scheme will be known as the " International Clearing of Vacancies and Applications for Employment." It will retain its basic purpose of enabling individual workers in the countries concerned to find employment in one of the member countries. It is not intended to provide for the large-scale movement of labour.

Under the procedure, which remains unchanged, the employment services of the countries concerned circulate to each other every six months particulars of occupations for which there are insufficient candidates nationally, and for which, subject to labour permit conditions, foreign workers may be acceptable. The normal conditions for the entry of foreign workers into this country and the issue of work permits apply. Seasonal and domestic employments are excluded.

Adult workers wishing to avail themselves of the revised scheme should apply to their local Employment Exchange. Any negotiations for employment will be carried out through the employment services concerned or an interested employer direct if he so desires. The decision to engage any worker under the scheme is the exclusive responsibility of the employer, although the employment services will ensure, as far as possible, that applicants submitted have the necessary qualifications and experience. Arrangements for the payment of travel costs are a matter to be agreed between the applicant and the employer in each individual case.

Stainless-steel Castings Agreement

Armco patents covering a range of precipitation hardening stainless steels applicable to castings are the subject of an exclusive licence that has been granted in the United Kingdom by the Armco International Corporation to A.P.V.-Paramount Limited, alloy steel founders and main subsidiary of A.P.V. Company, Limited, of Crawley, Sussex.

In general terms, the A.P.V./Armco range of hardenable stainless steels may be said to exhibit as castings the advantages generally associated with the austenitic stainless steels, *i.e.* superior corrosion resistance, weldability and castability, combined with those mechanical and physical properties normally attributed to the traditional straight 13 per cent. chromium and 18 per cent. chromium 2 per cent. nickel/martensitic types. For a given level of ductility A.P.V./Armco steels are said to be capable of developing higher tensile strength and hardness than the straight chromium steels referred to and a further advantage is that hardening heat-treatment, being carried out at a relatively low temperature, minimises problems associated with distortion, internal stress or scaling.

Machining characteristics are reported to be satisfactory at tensile levels as high as 65 tons per sq. in. and, where tensile properties at higher levels are required, *e.g.* at 75 tons per sq. in., machining can be completed after a preliminary heat-treatment when the steel is soft, the final high-tensile properties being developed subsequently by a low-temperature tempering treatment with negligible scaling and distortion effects.

Exhibitions

Laboratory Apparatus and Materials

The Laboratory Apparatus and Materials Exhibition is being held at the Royal Horticultural Halls, London, from June 19 to 22. On stand 33, the Griffin & George Group will be showing a comprehensive cross-section of laboratory furniture and instruments amongst which will be Shore sceleroscopes for metal-hardness testing.

Plastics

The International Plastics Exhibition and Convention (Interplas) opens at the Olympia on June 21, and continues until July 1. Exhibiting there will be Smith's Industrial Division who will be showing a number of instruments for temperature measurement and control. On stand C5, Hall C (Grand), Leicester, Lovell & Company, Limited, will be illustrating the application of their Epophen epoxy resins and hardeners to the production of pattern equipment.

International Instrument Show

The sixth International Instrument Show will be taking place this year at 4, Tilney Street, London, W.1, from June 19 to 23. It is regretted that exact details of the exhibits have not yet been made available by the organizers, but it is understood that there will be at least 180 new items among the several hundred to be on display. Instrumentation for research laboratories as well as industry will be well represented.

Construction Equipment

The International Construction Equipment Exhibition is being held at the Crystal Palace from June 15 to 24. Primarily of interest to the construction and building industries, exhibitors include a number of consumers of steel and other castings, including:—Ransome & Rapier, Limited; E. Boydell & Company, Limited; Chaseside & Company, Limited; Robert Hudson, Limited; R. Cripps & Company, Limited; Holman Brothers, Limited; Bristol Pneumatic Tools, Limited; amongst the exhibits of the George Cohen 600 Group, Limited, there will be several Jones KL cranes.

Business with Finland

Publications received from the Finnish Embassy include a statement from the Ministry of Foreign Affairs: *Finland Pictorial*, and a special issue of the *Scandinavian Times*. These publications, all of which are printed in English, stress the close business ties which exist between this country and Finland. Great Britain is one of Finland's largest customers, and buys from her considerable quantities of timber and paper. In the *Pictorial* magazine, there is a full-page advertisement for cast-iron ovenware showing really new and attractive designs. The frying-pan shown has a detachable wooden handle which terminates in a socket; this locks itself into a ball carried on a stem protruding from the edging of the pan. The writer found these publications to be of outstanding interest.

THE USE of mullite to polish spheroidal-graphite iron microspecimens has proved to be a satisfactory replacement for the polishing compound previously in use at the laboratory of the Lynchburg Foundry Company, Lynchburg, Virginia, USA. Mr. Carrington Martin, of the Lynchburg laboratory, who suggested the use of mullite in this connection, was awarded one of the company's proposal-plan awards.

American Letter

Production Statistics

The most recently available production and consumption statistics for the American foundry industry are disclosed in the following tables.

TABLE 1.—*Despatches of Grey Malleable Iron and Steel (tons).*

Year.	No. of foundries.	Grey.		No. of foundries.	Malleable.			No. of foundries.	Steel.		
		Ordinary.	Nodular.		Total.	Regular.	Pearlitic.		Total.	Carbon.	Alloy.
1945 ..	3,234	8,580,000	—	156	706,000	669,000*	24,730	419	1,735,000	—	—
1951 ..	3,026	12,280,000	—	161	840,000	803,000*	41,100	410	1,323,000	—	—
1955 ..	2,729	13,250,000	—	130	985,000	803,000*	137,200	452	1,370,000	725,000	316,000
1956 ..	—	12,380,000	—	—	850,000	725,000	124,000	—	1,728,000	1,000,000	398,000
1957 ..	2,578	11,300,000	66,000	—	770,000	636,000	134,000	480	1,575,000	1,185,000	392,000
1958 ..	—	9,250,000	97,500	—	590,000	483,000	107,000	—	994,000	716,000	285,000
1959 ..	2,370	10,990,000	152,000	124	817,000	652,000	166,000	490	1,262,000	930,000	325,000
1960 ..	—	10,320,000	151,000	—	733,000	564,000	168,900	—	1,337,000	906,000	330,000

* Estimated.

TABLE 2.—*Raw-material Production and Consumption (tons).*

	Iron and steel scrap consumption.		Pig-iron.			
			Production.	Consumption.		
	Cupola.	Air furnace.	Foundry grade.	Cupola.	Air furnace.	Electric furnace.
1950	9,474,000	1,118,000	2,560,000	5,475,000	319,000	326,000
1955	10,787,000	1,273,000	2,542,000	5,327,000	260,000	246,000
1956	9,817,000	1,133,000	2,143,000	4,420,000	242,000	190,000
1957	9,220,000	1,027,000	2,022,000	4,161,000	218,000	247,000
1958	7,726,000	821,000	1,448,000	3,315,000	169,000	231,000
1959	9,613,000	1,056,000	1,680,000	3,989,000	224,000	351,000
1960	9,000,000*	990,000*	1,298,000	3,430,000*	186,000*	328,000*

* Estimated for year 1961.

TABLE 3.—*Non-ferrous Castings Production in U.S. (tons).*

Copper-base.

Year.	No. of foundries	Total.	Sand.	Gravity die.	Ingot alloy used.
1950 ..	2,647 (51)	453,000	410,000	22,700	271,000
1955 ..	2,723	449,000	406,000	36,600	276,000
1956 ..	—	432,000	386,200	25,950	244,800
1957 ..	2,614	390,000	352,000	20,100	221,800
1958 ..	—	341,000	311,800	14,600	203,900
1959 ..	2,501	403,000	354,000	23,660	246,000
1960 ..	—	340,000	299,200	20,100	213,000

Aluminium.

Year.	No. of foundries.	Total.	Sand.	Gravity die.	Die.
1950 ..	2,888	201,800	68,000	63,500	63,500
1955 ..	3,355	235,000	73,800	136,000	158,500
1956 ..	—	358,000	76,900	118,300	168,000
1957 ..	3,404	336,000	63,500	107,000	167,000
1958 ..	—	286,200	55,900	100,000	129,500
1959 ..	3,374	350,000	63,900	122,000	164,800
1960 ..	—	335,000	58,100	115,200	161,000

Magnesium and zinc-base.

Year.	No. of foundries.	Total.	Anode.	Sand.	Gravity die.	Die.	Zinc-base.
1950 ..	—	—	—	—	—	—	240,000
1955 ..	261	12,400	5,350	7,050	2,680	2,680	350,000
1956 ..	—	16,100	5,350	7,420	1,028	2,240	308,000
1957 ..	234	13,400	4,200	6,700	865	1,870	300,000
1958 ..	—	12,080	3,400	6,520	715	1,430	264,000
1959 ..	253	12,080	3,120	5,500	715	2,860	294,000
1960 ..	—	10,280	2,770	3,660	670	3,400	278,000

Header-bodies for the Petroleum Industry

In the March, 1961, issue of the American journal *Industrial Heating*, it is stated that cast stainless header-bodies have given years of trouble-free service while solving oil-tube cleaning problems in producing high-octane gasoline at the El-Segundo plant of the Standard Oil Company of California. The castings serve as return bends of furnace tubes to control the direction of oil flow through the petroleum cracking furnace. These complex fittings are integrally made by casting an alloy whose composition provides for corrosion resistance and the design of the fittings aid in cleaning the oil pipe-lines in addition.

The header-bodies are cast of type CF-8 (Alloy Castings Institute designation) stainless alloy.* The integrally-cast header-body represents a satisfactory and economical design since welding of complex shapes is avoided and machining requirements are a minimum. Another advantage of the single-piece cast body is good resistance to severe mechanical shock, a frequent cause of leakage in welded joints. To ensure maximum corrosion-resistance, the stainless castings are heat-treated by water quenching from 1,090 deg. C. and stress-relieving at 870 deg. C. Carbon content is kept low (0.07 max.) for improved corrosion resistance. These fittings meet ASTM specification A217-55 grade C-12, which covers pressure-containing parts for high-temperature service.

* CF-8 alloy—Cr 18 to 21, Ni 8 to 11 (0.08 max.), Mn 1.5 max., and Si 2.0 max. per cent.

THE ANNUAL LUNCHEON of the British Engineers' Association was held on June 8, 1961, at the May Fair Hotel, London, with the president, Mr. A. I. Baker, C.B.E., J.P. (chairman, Baker Perkins, Limited), in the chair. The principal guest was Lord Catto of Cairncatto (a managing director of Morgan Grenfell & Company, Limited), who addressed those present on the financial aspects of mergers and take-over bids.

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News in Brief

ORDERS TO THE VALUE OF £150,000 for Angus computers received by Ferranti, Limited, Manchester, include one from Imperial Chemical Industries, Limited, and another from Babcock & Wilcox, Limited. The ICI computer will be used for the automatic running of a large chemical plant at Fleetwood, and Babcock & Wilcox have ordered the other computer for installation at the West Thurrock power-station in Essex.

AN INTERNATIONAL CENTRE FOR TRANSLATIONS from East European languages is to be established at the library of the University of Delft, Holland, as a result of a meeting of representatives from 12 European countries, the United States and Canada, held in Paris in October 1960. The Centre will concentrate initially on scientific and technical material and its objects will be to establish a permanent connection between national centres handling translations and to initiate co-operative studies; to keep an index of translations available and issue a regular bulletin of new additions; and to collect non-commercial translations from all countries.

THE FIRST FORUM ON EXPORTS held recently in Westminster by the Scientific Instrument Manufacturers' Association of Great Britain, 20, Queen Anne Street, London, W.1, was attended by over 100 senior executives representing over 60 member-firms of the Society. The aim of the Forum was to enable members to pool their specific knowledge and assist smaller firms with their export problems. A panel of experts from SIMA's export committee and from the Board of Trade discussed such topics as the possibilities of group selling, pooling of agencies, credit facilities, export statistics, and the prevailing export climate in many overseas territories.

G. L. WILLAN, LIMITED, steel manufacturers, Sussex Street, Sheffield, have acquired a 12-acre site at Catcliffe, Rotherham, for future development and eventually to move the business of the group outside Sheffield because of expansion difficulties within the city. It is planned to have a two-acre factory on the new site in two or three years. The group was founded nine years ago by Mr. Geoffrey L. Willan, and two years ago the firm merged with Marsh Bros. & Company, Limited. Eventually the works of G. L. Willan, Limited, in Sussex Street, Marsh Bros. & Company, Limited, in Shude Hill, and G. L. Willan (Castings), Limited, in Shoreham Street, will be available for sale.

CLAIMED to be the "biggest-ever," a flexible coupling made by Crofts (Engineers), Limited, Bradford, will help boost British steel production at the new Spencer Works of Richard Thomas & Baldwin at Newport, Monmouthshire. This steelworks, one of the most modernly equipped in the country, will use the revolutionary L-D oxygen-blown steelmaking process in which the steel converters will be electrically tilted, the drive being engaged through the massive internal-gear flexible couplings designed and manufactured by Crofts. Three of these couplings are being built into the installation, each 73 in. dia. and weighing 11.8 tons, and each rated equivalent to 45,000 h.p. at 100 r.p.m.

HALL, RUSSELL & COMPANY, LIMITED, Aberdeen, are to build an oceanographic research ship, Discovery II, for the Government at a cost of £800,000. It will mean 18 months' work for the firm, who for some time past have been paying off staff for lack of work. The new vessel will have a complement of 57, including 14 scientists, and will carry out wide-ranging researches into fish development. The cost of the ship will be shared equally by the Admiralty and the development fund. The Discovery is expected to be ready for service towards the end of 1962 and will be equipped with the most modern oceanographic equipment: displacement will be about 3,000 tons, with a range of 15,000 miles.

STEADY PRODUCTION SHOULD BE PLANNED in an industry the size of the car industry, said Mr. F. Cogley, of Liverpool, in his presidential address at the conference of the National Union of Vehicle Builders at Bridlington on June 5. He said that at the last conference the discussion concerning the car industry was conducted in an atmosphere of a minor boom. All the major car manufacturers were increasing their output and production records were being broken with monotonous regularity. He added "This sort of situation of recurring booms followed by recessions is not one we can view with equanimity. We cannot tolerate the situation where men work so many months in the year and are idle for several months."

STAVELEY IRON & CHEMICAL COMPANY, LIMITED, Chesterfield, announced on June 1 that the sand spun plant will close down on July 28. The official announcement says that for a considerable time orders for pipes by this process have been diminishing, that the plant has been operating uneconomically, and that future demand for this type of pipe is insufficient to warrant continued production. The plant produced cast-iron pipes for gas, water and sewage schemes. Staveley will continue to manufacture pipes by the metal spun process. Staff, trade union representatives and employees have been told of the proposed closure, and the 200 men affected have been assured that every possible consideration will be given to finding them alternative work within the company, which employs nearly 6,000.

THE REDUCTION OF HOURS OF WORK, and workers' housing, will be two of the subjects discussed at the 45th session of the International Labour Conference which opened in Geneva on June 7, and is expected to continue until about June 29. Both these questions were first discussed last year, and it is expected that recommendations on them will be adopted. Other questions to be considered are vocational training, equality of treatment of nationals and non-nationals in social security, employment problems and policies and the role of the International Labour Organization in the promotion of economic expansion and social progress in developing countries. There will also, as usual, be an examination of the application of conventions and recommendations, and financial and budgetary questions will be decided.

A NEW COMPANY to manufacture semi-trailers has been formed and will be known as Crane Fruehauf Trailers, Limited, of Cromer Road Works, North Walsham, Norfolk. The company has been jointly initiated and capitalized by Cranes (Dereham), Limited, of South Green Works, Dereham, and Fruehauf International, Limited, subsidiary of Fruehauf Trailer Company, Detroit, USA. The sales office of Crane Fruehauf Trailers, Limited, is located at South Green Works, Dereham, Norfolk, and the manufacture of the trailers will be carried out at the new projected North Walsham factory. The London sales office will operate from:—28, Sicilian House, Sicilian Avenue, Southampton Row, London, W.C.1. Mr. G. A. W. Crane has been appointed chairman and managing director and the sales director is Mr. J. L. B. Crane.

ENGLISH STEEL CORPORATION, LIMITED, has placed an order worth nearly £1,000,000 with the heavy plant

division of Associated Electrical Industries, Limited, for electrical equipment for four rolling mills which are to be installed at English Steel Corporation's new Tinsley Park Works, Sheffield. The equipment will include two 3,500 h.p., d.c. motors for the twin drive of a 42-in. blooming and slabbing mill which will be supplied by Davy & United Engineering Company, Limited, and the Brightside Foundry & Engineering Company, Limited, who are acting together as a consortium. Two 32-in. billet mills, which will also be supplied by the consortium, will be equipped with AEI motors; the complete order for the bar mills has gone to the Brightside Foundry & Engineering Company, Limited. As well as the main motors, AEI will supply all ancillary electrical equipment.

THE NEW ROLLS-ROYCE "ECONOMY" JET ENGINE, the Spey, which has been selected for BEA, last month reached the stage where it was to be tested in the firm's £6,000,000 altitude-test plant at Derby, the only one of its kind in Britain. The by-pass engine, which has a very low fuel consumption, will be subjected to the full range of flying conditions. Static testing was started late in May. The Speys will start flying in an Avro Vulcan during August. Following initial ground running trials in the Trident, engines will be provided for the prototype flight trials of the aircraft which are scheduled to start during the winter. The civil and military Spey engines are being developed to an integrated programme which provides for a total of 14 bench development engines in addition to engines used for flight development and endurance testing. The military contract for the Spey covers initial development work and supply of prototype engines.

IN A PLAN for the doubling of tractor output by David Brown Tractors, Limited, 80 large machine-tools for machining major iron castings for two types of tractor have been transferred from Meltham, near Huddersfield, to Leigh, Lancashire, without loss of output at a time of record production. To make the best use of labour and space at both the Meltham and Leigh factories, a section of the Leigh works of Harrison, McGregor & Guest, Limited, the machinery-manufacturing division of David Brown Tractors, is being developed for machining major tractor components. There was site space and a large workshop not being used to capacity at the Leigh works, and good prospects for the recruitment of additional labour. One hundred more workers have been taken on during the past 12 months at Leigh and more will be needed as further machine-tools are installed under the second stage of the plan. The Meltham labour force is also being increased.

G.W.B. FURNACES, LIMITED, Dudley, Worcs, have received an order to build what will be one of the largest and most powerful high-frequency induction-melting furnaces in the United Kingdom. This order has been placed with G.W.B. by the North Eastern Iron Refining Company, Limited, of Stillington, Stockton-on-Tees. It will be used for the production of highly-specialized refined alloy pig-irons and steel. The first furnace body will have a capacity of up to 7 tons of molten metal, but the electrical equipment has been so designed that a second furnace-body may have a capacity of just over 10 tons. The plant will be housed in the main cupola melting-shop to allow for duplexing operations and machine casting. The equipment will be engineered and built by G.W.B. to an approved design of Demag Elektrometallurgie. The unit is expected to be commissioned in December of this year. G.W.B. have already secured orders from Steel Peech & Tozer to build four electric arc-melting furnaces.

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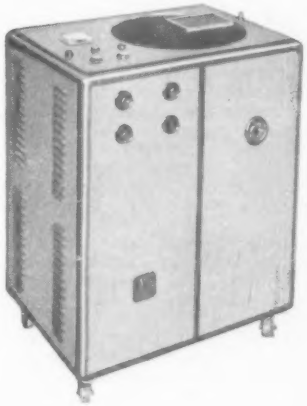

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Raw Material Markets

Iron and Steel

Outputs of pig-iron are maintained at recent levels, approximating an average annual rate of up to 16,000,000 tons. Supplies of all grades are sufficient to satisfy the needs of all consumers, and most producers have tonnages to spare to meet increases in demand. Basic pig-iron is being taken up by the steelworks in substantial quantities, and adequate supplies are being received to cover consumption and stock. Outputs are governed by demand, and furnace capacity is available to supply increased tonnages if required. Distribution is arranged whereby excess tonnages arising in some areas are supplied to other consumers in need of supplies.

The grades utilized by the iron foundries are also plentiful, and no difficulty arises in covering their needs. The low phosphorus irons, which continue in heaviest demand, are available in the quantities required by the engineering and speciality foundries, and although one or two furnaces are still limited in production other irons in equal quality and analysis are being produced to cover any possible deficiency in some brands. Hematite pig-iron is also in good supply, and the refined grades are readily available. High phosphorus irons are in good supply and available in quantities more than sufficient to meet the needs of the light, jobbing, textile, and some of the engineering foundries.

Business at the iron foundries continues at recent levels. Those producing high-quality castings are steadily employed. The foundries catering for the motor vehicle trade are receiving regular demands which enable them to return good outputs. The machine-tool and other trades are specifying freely for high-duty castings, and the foundries supplying these are reasonably well employed.

More work is needed by most of the light foundries to enable them to improve on their moderate production levels. This applies particularly to those producing castings for the domestic utensil trade, and although demands fluctuate capacity is available for increased business. The building trade is maintaining a good demand for castings, and the light foundries supplying these are fairly well employed. The textile foundries are only moderately employed, and many of the jobbing foundries could undertake more work.

The foundries are able to obtain most of the cast-iron and steel scrap they need, but arisings of the better and heavier grades of cast-iron and machinery scrap are insufficient to satisfy demand fully. Foundry coke, ganister, limestone, and firebricks are delivered to requirements.

Steady demands are being made for the products of the re-rollers, but these generally are well below previous levels, apart from reinforcing rods and bars which continue in heavy request. Arrears of work have now been liquidated and production depends on day-to-day orders for small bars, light sections, and strip. Most of the re-rollers are able to offer prompt rollings, and could undertake more work. Supplies of mild steel semis are plentiful and most of the re-rollers appear to be working from stocks as demands for supplies from home steelworks are moderate.

Non-ferrous Metals

Tin continues to be the centre of interest in the non-ferrous metal markets. Demand throughout the world is steady and at a high level, while world production is static. The result has been to push up the price of cash tin to £880 a ton, the price at which the Buffer Stock Manager has no alternative but to sell. Three months metal has gone ahead to around £890 a ton and the feeling is that this premium will widen further. Meanwhile, the Singapore market is strong and the price is at its highest since the Korean war. In the US the price has climbed to around $1.13 a pound and demand is steady to strong.

Copper is not so strong as formerly either in the UK or in New York. However, the situation in Laos has deterred sellers as has the still unsettled situation at the El Teniente Mine in Chile. There has not been any news of the negotiations between Kennecott and the unions and opinion is still fairly evenly divided on the possibilities of a strike ensuing at the end of the month when the present labour contract expires. The US price structure is unchanged with both custom smelters and producers quoting 31 cents a pound, although the custom smelter intake price for scrap has fallen back to 26½ cents a pound which seemingly precludes any immediate possibility of an increased price. The current weakness in copper probably discounts to some extent the approaching holiday season and prices should not wander far from their present level one way or the other.

Lead has been a relatively steady market in London, but this has not prevented the price from sagging to below £65 a ton. At this depressed level some support for the market should be forthcoming.

Zinc is still weak. Stocks are mounting and are being swelled by metal coming in from Canada and the US. Consumption of zinc in the UK in the month of April registered a drop of 14 per cent. on that of the previous month. In the US high grade zinc is still being sold at a discount from the official price and with plenty of metal about the outlook continues bleak. The same comment really applies to lead, the consumption of which in April in the UK showed a decline of 6 per cent., compared with the preceding month. The UK price is fluctuating narrowly around £79-£80 a ton.

Catalogues

Castings. General Catalogue No. 1, released by Thomas Carling & Company, Limited, Shakespeare Works, Salop Street, Bolton, carries on page three a complete index of all the products made by the firm. Full details of six of the 13 major lines manufactured by the company are given in this issue, the remaining seven items will be covered in the next edition. Amongst products included in the present brochure are castings, pressure gauges, valves, extrusions and brass and copper tubes. This excellent catalogue, which is well produced, spirally bound and colour printed, is marred only by a picture of the fettling shop showing an untidy floor and men working without goggles. For publicity work more attention should be given to such details.

Steel. In Publication No. 463, Hadfields, Limited, East Hecla Works, Sheffield, list and illustrate the plant they operate for making steel billets, bars, slabs and forgings to British Standard specifications. Most of the brochure is taken up by tables giving the chemical and mechanical properties of these products.

Mobile Crane. Ransomes & Rapier, Limited, Ipswich, have issued a 16-page well-illustrated brochure to give details—including much technical data—of their new 511 mobile crane. A wide range of sizes, up to six tons, is available.

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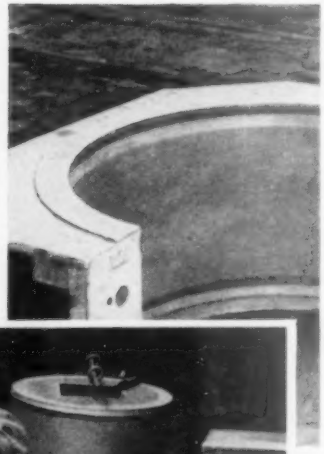

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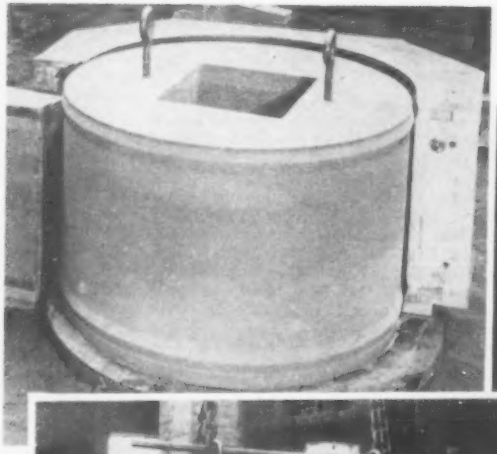

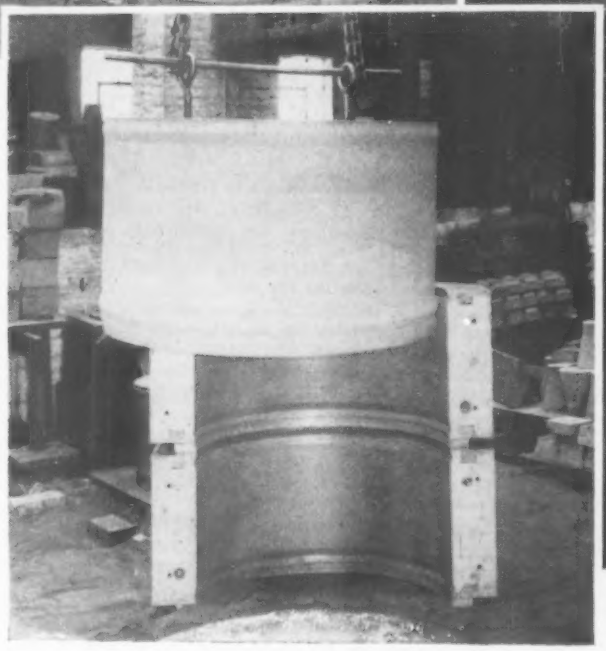

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FOUNDRIMET FOUNDRY & METALLURGICAL F.&M.S.L.

Current Prices of Iron, Steel, and Non-ferrous Metals

(Basis prices, delivered unless otherwise stated)

June 14, 1961

PIG-IRON

Foundry Iron.—No. 3 IRON, CLASS 2, 10-ton lots or over Middlesbrough, £21 17s. 0d.; Birmingham, £21 9s. 3d.

Low-phosphorus Iron.—Over 0.10 to 0.40 per cent. P 10-ton lots or over, £23 5s. 0d., delivered Birmingham £23 10s. 0d., delivered Grangemouth.

Cylinder and Refined Irons.—North Zone, £25 6s. 6d. South Zone, £25 9s. 0d.

Refined Malleable.—P, 0.10 per cent. max.; North Zone £26 6s. 6d.; South Zone, £26 9s. 0d.

Hematite.—Si less than 2 per cent, S. & P. over 0.03 to 0.05 per cent., 10-ton lots or over; N.-E. of England (local iron), £23 19s. 0d.; Scotland (Scotch iron), Zone S.1, £24 5s. 6d.; Sheffield, £25 9s. 0d.; Birmingham, £25 13s. 0d.; Wales (Welsh iron), £23 19s. 0d.

Basic Pig-iron.—£20 3s. 0d., delivered Staffs, Derbyshire, Notts, Lincs, Rutland, Northants, and Leicestershire in 10-ton lots or over.

FERRO-ALLOYS

(per ton unless otherwise stated, delivered)

Ferro-Silicon (6-ton lots and over).—45 per cent. Si, £45 0s. 0d. to £48 0s. 0d., scale 15s. 0d. per unit, lumpy, 75 per cent. Si, £62 0s. 0d. to £66 10s. 0d., scale 15s. 0d. per unit, lumpy.

Ferro-vanadium.—50/60 per cent., 22s. 6d. per lb. of V.

Ferro-molybdenum.—65/70 per cent., carbon-free, 12s.10d. per lb. of Mo.

Ferro-titanium.—20/25 per cent., 2-3 per cent. Cu, £250 0s. 0d.; 38/40 per cent., commercially carbon-free, £287 0s. 0d.

Ferro-tungsten.—80/85 per cent., 9s. 11d. per lb. of W.

Tungsten Metal Powder.—98/99 per cent., 12s. 11d. per lb. of W.

Ferro-chrome (6-ton lots and over, lumpy).—4/6 per cent. C, £81 10s. 0d. to £84 10s. 0d., basis 60 per cent. Cr scale 27s. 0d. to 28s. 6d. per unit; over 6 per cent. C, £79 0s. 0d. to £82 10s. 0d., basis 60 per cent. Cr, scale, 27s. 0d. to 28s. 6d. per unit; 2 per cent. C,* 1s. 8d. to 1s. 11d. per lb. Cr; 1 per cent. C,* 1s. 8d. to 1s. 11½d. per lb. Cr; 0.15 per cent. C,* 1s. 9½d. to 2s. 0½d. per lb. Cr; 0.10 per cent. C,* 1s. 9½d to 2s. 0½d. per lb. Cr; 0.06 per cent. C,* 1s. 11d. to 2s. 1d. per lb. Cr.

Metallic Chromium.—98/99 per cent., 6s. 10d. per lb.

Metallic Manganese.—94/96 per cent., carbon-free £275 0s. 0d.; 96/98 per cent., £285 0s.0d.

Ferro-columbium.—65/67 per cent. Cb + Ta, 19s. 0d. per lb., Cb + Ta.

Ferro-manganese (Standard).—78 per cent., £58 10s. 0d.

SEMI-FINISHED STEEL

Re-rolling Billets, Blooms, and Slabs.—BASIC: Soft u.t., 100 tons and over, £31 15s. 6d.; tested, 0.08 to 0.33 per cent. C, 100 tons and over, £32 5s. 6d.; hard (0.41 to 0.60 per cent. C), 50 tons and over, £33 17s. 0d.; silico-manganese, 50 tons and over, £42 16s. 6d.; free-cutting, 50 tons and over, £35 4s. 6d. SIEMENS MARTIN ACID (50 tons and over): Up to 0.25 per cent. C, £40 11s. 0d.; silico-manganese, £43 4s. 0d

Billets, Blooms, and Slabs for Forging and for Stamping (50 tons and over).—BASIC: Soft, up to 0.33 per cent. C, £37 0s. 0d.; basic, hard, over 0.41 up to 0.60 per cent. C, £38 2s. 6d.; acid, up to 0.25 per cent. C, £41 14s. 0d.

FINISHED STEEL

Heavy Plates and Sections (50 tons and over).—Ship plate (N.-E. Coast), £40 7s. 0d.; boiler plates (N.-E. Coast), £42 17s. 0d.; floor plates (N.-E. Coast), £41 16s. 0d.; angles (N.-E. Coast), £38 1s. 6d.; joists (N.-E. Coast), £37 17s. 6d.

Small Bars, Sheets, etc.—Rounds and squares, under 3 in., and flats 5 in. wide and under, untested soft basic, 50 tons and over, £39 1s. 0d.; under 10 tons to 4 tons, £40 18s. 6d.; under 4 tons to 2 tons, £41 3s. 6d.; hoop and strip, coils, 100 tons and over, £38 0s. 0d.; uncoated strip mill coils, hot rolled, under 3 mm. to 12g., 25 tons to under 50 tons, £43 16s. 0d.; black sheets (hand mill), 24g., 10 tons and over, £57 14s. 6d.; galvanized corrugated sheets, 24g., 10 tons and over, £67 11s. 0d.

Alloy Steel Bars.—1 in. dia. and up: Nickel, £66 7s. 0d.; nickel-chrome, £97 1s. 0d.; nickel-chrome-molybdenum, £109 14s. 0d., in lots of 25 tons and over.

NON-FERROUS METALS

Copper.—Cash, £237 5s. 0d. to £237 10s. 0d.; three months, £240 0s. 0d. to £240 5s. 0d.; settlement, £237 10s. 0d.

Copper, Tubes, etc.—Solid-drawn tubes, 2s. 4½d. per lb.; rods, 253s. 6d. per cwt. basis; 20 s.w.g., 388s. 6d. per cwt.

Tin.—Cash, £879 10s. 0d. to £880 0s. 0d.; three months £888 0s. 0d. to £888 10s. 0d.; settlement, £880 0s. 0d.

Lead (Refined Pig).—First half June, £64 7s. 6d. to £64 12s. 6d.; first half September, £65 12s. 6d. to £65 15s. 0d.; settlement, £64 12s. 6d.

Zinc.—First half June, £78 15s. 0d. to £78 17s. 6d.; first half September, £79 15s. 0d. to £79 17s. 6d.; settlement, £78 17s. 6d.

Zinc Sheets, etc.—Sheets, 15g. and thicker, all English destinations, £117 0s. 0d.; rolled zinc (boiler plates), all English destinations, £114 15s. 0d., zinc oxide (Red Seal); d/d buyers' premises, £97 10s. 0d.

Brass Tubes, etc.—Solid-drawn tubes, 1s. 11½d. per lb.; sheets to 10 w.g., 206s. 3d. per cwt.; wire, 2s. 9d.; rolled metal, 206s. 3d. per cwt.

Brass (Brazing).—BS1400, B3, £182; B6, £229.

Brass (High Tensile).—BS1400, HTB1, £197; HTB2 £216; HTB3, £236.

Gunmetal.—BS1400, LG2, £225; LG3, £234; G1, 1%, £301; G1, 1%, £291.

Phosphor Bronze.—BS1400, PB1 (AID released), £317 BS1400, 90/10/1, £305.

Leaded Phosphor Bronze.—BS1400, LPB1, £249.

Phosphor Bronze Strip, etc.—Strip, 303s. 0d. per cwt. wire, 4s. 2¾d. per lb.; rods, 3s. 5½d.; tubes, 3s. 5½d.; chill cast bars, solids 3s. 5½d.; cored 3s. 6½d. (CHARLES CLIFFORD LIMITED).

Nickel Silver, etc.—Rolled metal, 3 in. to 9 in. wide × 0.056, 3s. 11½d. per lb.; round wire, 10g. in coils (10 per cent.), 4s. 4¾d.; special quality turning rod, 10 per cent., ½ in. dia., in straight lengths, 4s. 3¾d. All prices are net.

Other Metals.—Magnesium, ingots, 2s. 2½d. to 2s. 3d. per lb.; Antimony, English, 99 per cent., £230 0s. 0d. Quicksilver, ex-warehouse, £67 0s. 0d. Nickel, £600 0s. 0d. Aluminium, ingots, £186 0s. 0d.; aluminium bronze (BS1400), AB1, £252; AB2, £260.

* Average 68-70 per cent.

Company News

WOLVERHAMPTON DIE CASTING COMPANY, LIMITED—Declaring an unchanged interim dividend of 10 per cent. the chairman, Mr. W. C. Sproson, says that, while a revival in demand for the company's products from the car industry is apparent, this has come too late to have any marked effect on the profits for the year to June 30, 1961.

MORGAN CRUCIBLE COMPANY, LIMITED, manufacturers of furnaces, refractories, etc., of London, S.W.11—Following increased profits, the company is raising its dividend for the year ended April 2, 1961, to 14 (13) per cent. with a 9 per cent. final. Group profits for the year were £2,235,815 (£2,043,417), subject to tax of £1,087,759 (£936,159).

W. H. ALLEN SONS & COMPANY, LIMITED, mechanical, hydraulic and electrical engineers, of Bedford—Group profit, before tax, for 1960 amounted to £794,186 against the 1959 figure for the parent only of £903,630. The parent's 1960 profit is £667,210. After tax of £377,000 the group net profit is £417,186, the parent company's being £370,210 (£491,630). A final dividend of 7½ per cent. makes 10 per cent. against the 1959 total equivalent of 9⅓ per cent.

THE ASSOCIATION OF LIGHT ALLOY REFINERS AND SMELTERS from 3, Albemarle Street, London, W.1, have issued an addendum to their standard classifications and segregation schedule for aluminium and aluminium-alloy scrap (September, 1960, edition), stating that this is necessary because of recent changes in aircraft specifications.

Law Cases

Agreement Repudiated

Ironfounders and patternmakers, Berry & Dewhirst, Limited, Mirfield (Yorks), was awarded £3,000 damages and costs at Leeds Assizes, against Mr. Leslie George Hemsley, Huddersfield, in an action which arose from negotiations in January, 1959, for the sale of the firm's ironfoundry at Mirfield.

Mr. Justice Havers said that the case for Berry & Dewhirst was that in correspondence between the parties a contract was concluded for the sale of the premises to Hemsley for £7,500. Later, Hemsley, who claimed he had never made an agreement, repudiated the agreement, and the premises were subsequently sold to a third party for £4,500.

Safety-catch not Replaced

Claim against Richard Thomas & Baldwins, Limited, by Mr. Harry Dennis Wootton (32), for personal damages was dismissed by Judge Norman Carr at Stourbridge County Court. It was stated that Mr. Wootton failed to set the safety catch on a machine at the Brierley Hill factory after he had removed the guard to make an adjustment. A sweeper had hit the foot pedal starting the machine with her broom and the plaintiff had injured his hand.

The judge ruled that there had been no statutory breach of the Factory Act by the firm and no negligence on the part of the sweeper. The accident resulted from negligence by the plaintiff, who was ordered to pay costs.

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REFRACTORIES

Publications Received

Report of the Research Council for the Year 1960. Published for the Department of Scientific and Industrial Research, by Her Majesty's Stationery Office, York House, Kingsway, London, W.C.2; price 4s. 9d. post free.

Whilst readers are familiar with the work accomplished by research organizations catering directly for their needs, they are probably unfamiliar with the pattern of research undertaken nationally. For instance, it is disclosed in this report that there has recently been formed a new association covering the products of the brush industry. In this connection, it is learnt that the filling material is often the most costly component of a brush. It is also pointed out that brush design is mainly traditional and needs fundamental examination. Information is also given as to the start of a machine-tool industry—which when in operation may have profound repercussions on the foundry industry—and of the creation of a national lending library for science and technology. There are many paragraphs about other developments which makes the publication of real interest to the manufacturers of cast products.

Verein für Praktische Giessereiforschung (Practical Foundry Research Association) (In German). Ninth annual report published by the Association from 31, Parkstrasse, Leoben, Austria.

This report shows that in 1960 there was a 35 per cent. increase in direct subscriptions, and a 33 per cent. advance in receipts for sponsored research and about 30 per cent. for routine testings. The Association now has 115 members for whom some 627 chemical, physical, and mechanical tests were carried out. As is usual in such reports changes in Council, membership, contributions to technical literature and the like are all listed. The director, Dip.Ing. Rolg Ziegler, must have found satisfaction in being able to report such noteworthy progress.

Drilling Carbon Steels, being Report No. 50. Issued by the Production Engineering Research Association of Great Britain, Melton Mowbray, Leicestershire.

This, in the opinion of the reviewer, is a model of a research report as it sets out in plain English the objectives sought, the conclusions, which are confined to two steels, En 3A and En 10, and the recommendations drawn from the work done by the Association on drill-point shapes. A simple diagram explains the technical terms used. For those operating small machine-shops, where both low and medium carbon steels will be encountered, it is recommended that a drill point angle of between 100 and 105 deg. should be used.

Iron Castings for Industry. Published by the National and Midland Ironfounders Association, 69, Harborne Road, Edgbaston, Birmingham 15.

This is a particularly well-produced 16-page brochure, printed in two colours. Not all, but a very large number of applications for iron castings have been illustrated and annotated. The text carries a number of tables detailing the major properties of the alloys entering into the range of cast iron, whilst to each major property there are supporting paragraphs. If the objective of this brochure is to interest the designer in the potentialities of cast iron by providing a readable, well-illustrated digest, then the Association has been really successful.

Transport Age, 17. Published by the British Transport Commission, 222, Marylebone Road, London, N.W.1; price 2s. 6d.

The contents of this issue are particularly attractive and especially did the reviewer like an article on the "Taverns of the Boatmen." It is both well written and charmingly illustrated. Good use has been made of colour printing to illustrate an article on the latest type of Pullman. As an industrial survey, North Staffordshire is featured, whilst an interesting phase of history is covered by a "History on Wheels," where a number of real museum pieces have been selected for description.

Ironfoundry Technique Published by the Council of Ironfoundry Associations, 14, Pall Mall, London, S.W.1.

This interesting and useful brochure was issued to synchronise with Commonwealth Technical Training Week. It has been compiled by assembling in book form about a dozen charts, which show pictorially the major aspects of the techniques used in foundry practice. Excellent use has been made of red, usually to show the presence of metal. It is a publication which should be in the hands of every foundry apprentice in the country.

Metal Bulletin, Special Issue. Published from Birkett House, 27, Albemarle Street, London, W.1; price 10s. post free.

This special issue of the *Bulletin* has been produced to mark the occasion of the opening of the re-built London Metal Exchange. Within the compass of 88 pages, every facet of the activities of the Metal Exchange is given, and included are lists of members, official warehouses and assayers and the metal brands registered on the Exchange. A proper picture is given of the LME through articles from both home and foreign users of its services.

Trading Opportunities in Europe, Part I. Published by the Export Council for Europe, 21, Tothill Street, London, S.W.1.

Most businessmen know the potentialities and difficulties of the markets in some European countries, but few are familiar with the economic climate in all the nine States detailed in this report, which covers Austria, Denmark, France, Italy, Norway, Portugal, Spain, Sweden and Switzerland. It is a pity that Germany was not included in the report as business with this country is rapidly increasing.

Annual Report 1960 of the British Coal Utilization Research Association. Published from the Association's headquarters, Leatherhead, Surrey.

Much of the interesting work carried out by this Association is of interest to the solid-fuel-burning equipment manufacturers and the report details recent developments in connection with the stoking of industrial boilers and central-heating equipment. The report costs 10s.

Overseas Survey, 1961. Published by Barclays Bank D.C.O., 54, Lombard Street, London, E.C.3.

Market conditions in over 40 overseas countries are surveyed in this beautifully illustrated report. Stress is laid on Africa which comes in for detailed consideration.

DALE ELECTRIC (YORKSHIRE), LIMITED, following an agreement with Cummings Engines, Limited, Shotts, Lanarkshire, have begun production on a new range of generating sets, incorporating Cummings diesels.

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Advertisements (accompanied by a remittance) and replies to Box Numbers should be addressed to the Advertisement Manager, Foundry Trade Journal, John Adam House, 17/19, John Adam Street, Adelphi, London, W.C.2. If received by first post Monday advertisements can normally be accommodated in the following Thursday's issue.

SITUATIONS WANTED

WORKS ENGINEER (41), experienced all aspects installation, maintenance, development of mechanised foundries with modern techniques, requires new appointment. Good background and qualifications. Salary required £2,000. Box WE790, FOUNDRY TRADE JOURNAL.

FOUNDRYMAN, with sound broad experience foundry practice, technical, residing South now, free to represent Foundry Suppliers, Equipment, or Foundries seeking representation for their products. Own car. Good character. Reply: J. P. F., "Carriden," Longacre Drive, Ferndown, Dorset.

IRONFOUNDRY TECHNICIAN METALLURGIST desires position with small or medium size foundry, early 40's. Wakefield, Bradford, Huddersfield, Leeds area. Box IF801, FOUNDRY TRADE JOURNAL.

FOUNDRY TECHNOLOGIST seeks position as Outside Customer Liaison Officer. Six years' managerial experience in grey iron, malleable and some non-ferrous. Box FT809, FOUNDRY TRADE JOURNAL.

SITUATIONS VACANT

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Foundry Trade Journal

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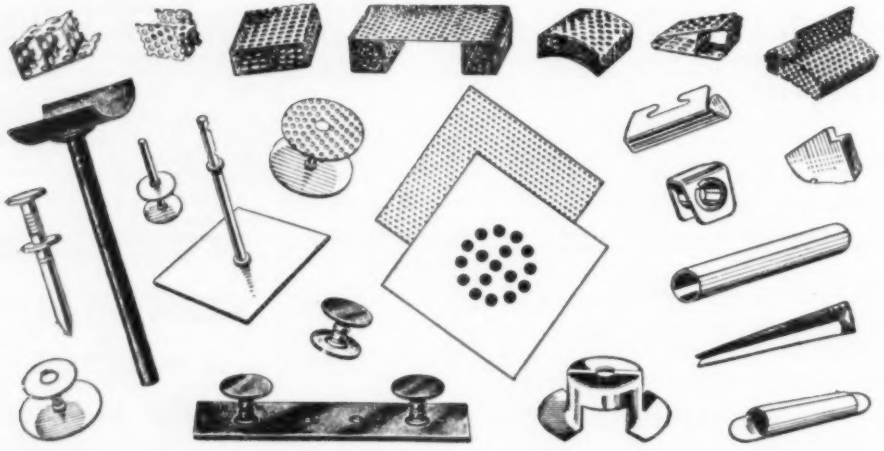

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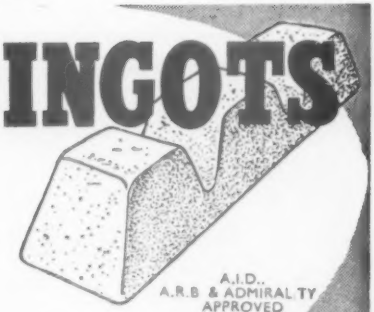

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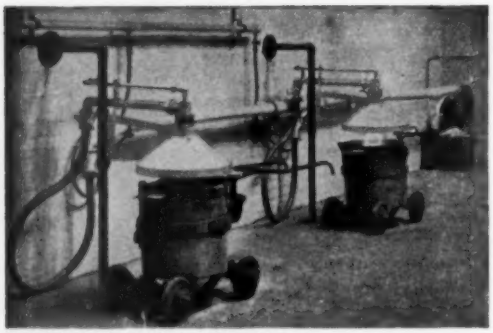

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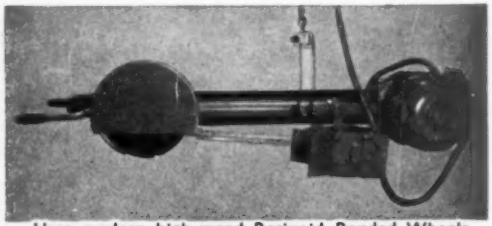

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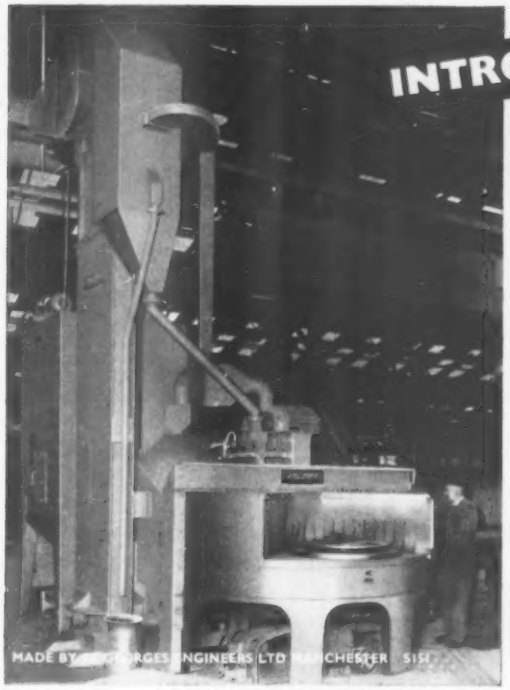

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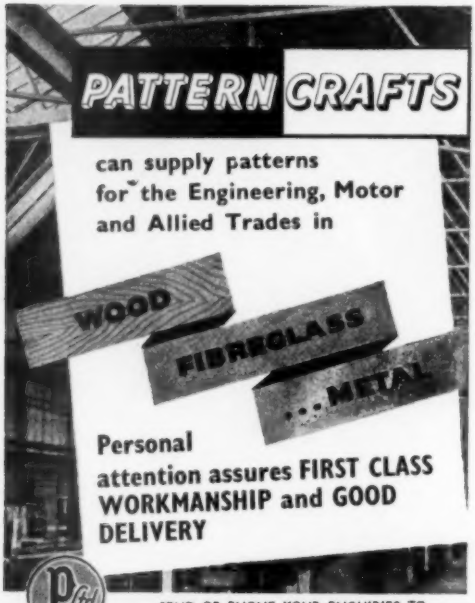
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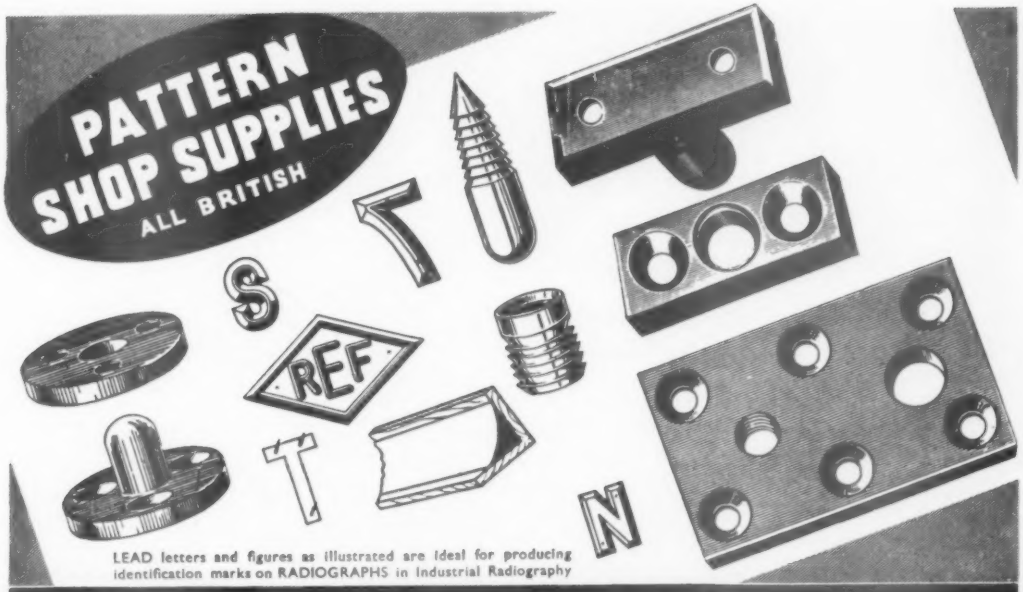
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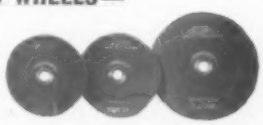

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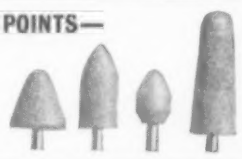

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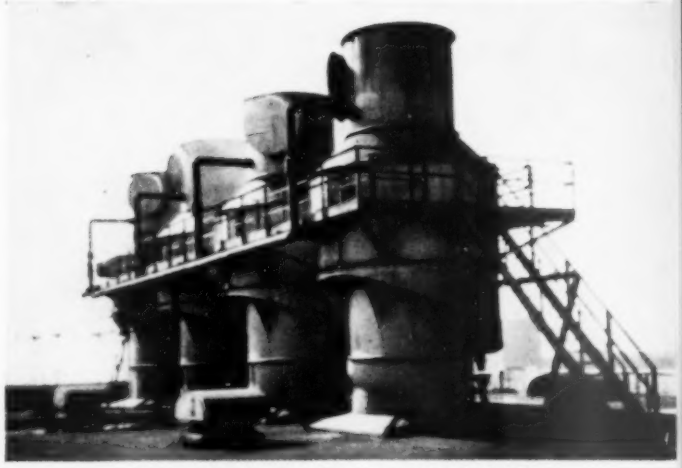

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